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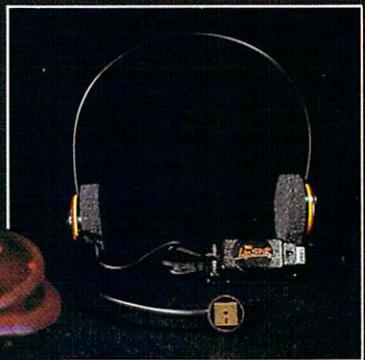
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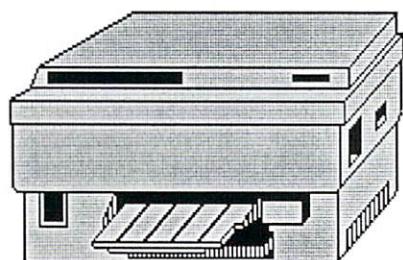
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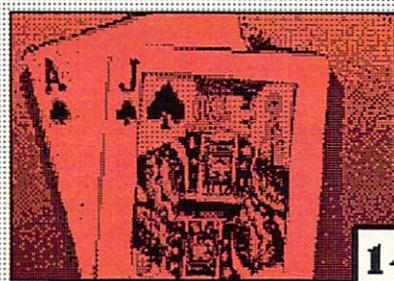
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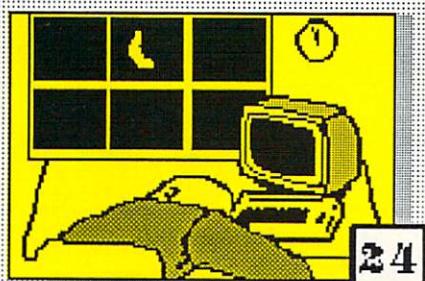
CONTENTS # 17



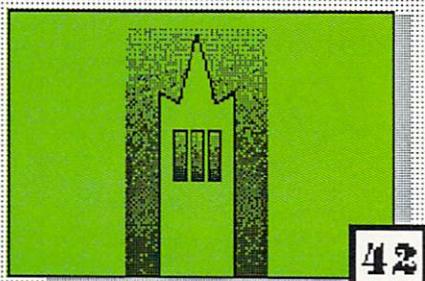
14



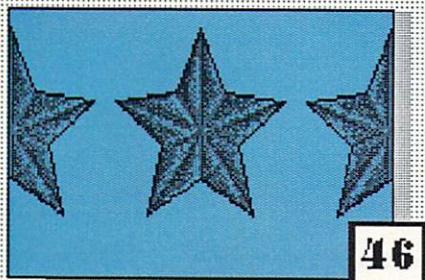
27



24



42



46

DEPARTMENTS

- 14 16-BIT GALLERY
- 20 8-BIT GALLERY
- 13 READER MAIL
- 22 MAGAZINE INDEX
- 37 NEWS/VIEWS/RUMORS
- 73 NEW PRODUCTS
- 24 MIDNITE SOFTWARE GAZETTE
- 56 INFO UPDATE
- 26 REAL WORLD
- 33 BEST OF PUBLIC DOMAIN
- 110 ADVERTISER INDEX
- 100 BACK ISSUES
- 110 UNCLASSIFIEDS

FEATURES

- 27 INTERVIEW: PAUL MONTGOMERY
- 59 16-BIT COMPUTERS COMPARED
- 29 INFO LOOKS AT GAMES
- 42 GEOS UPDATE
- 48 AMIGA 500 CONTEST WINNER

REVIEWS

- 46 CCSZ CLOCK/CALENDAR
- 49 WORD WRITER 3
- 52 1571 ROM UPGRADE
- 63 B.E.S.T. ACCOUNTING
- 66 DIGA!
- 57 STARBOARD

ANOTHER DULL DAY?

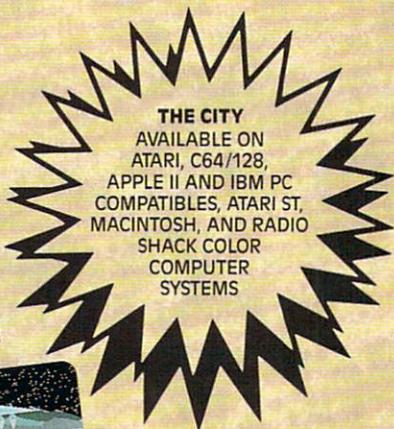
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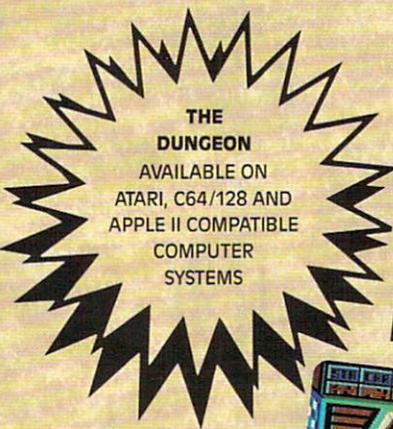
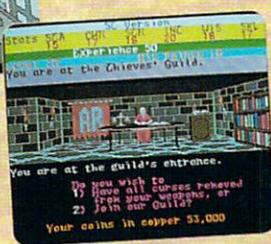
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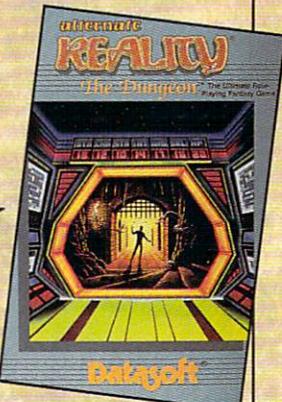
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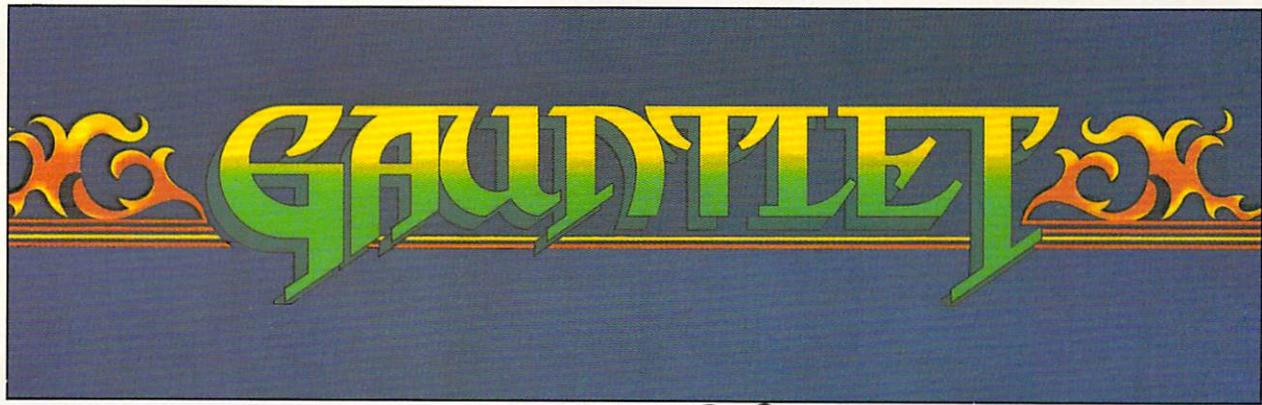
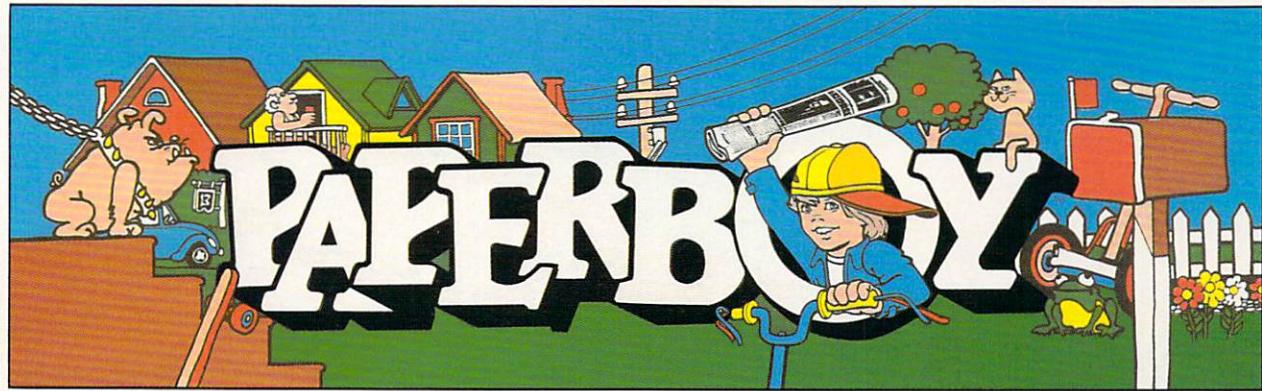
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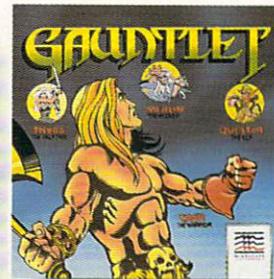
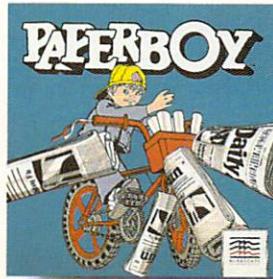
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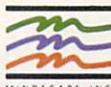
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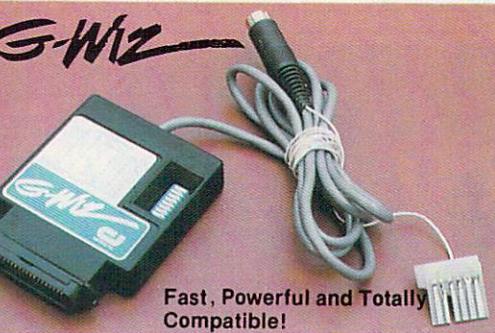
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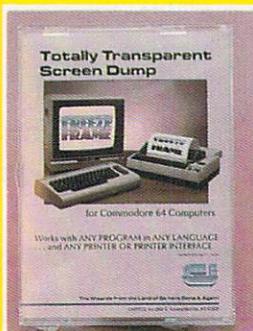
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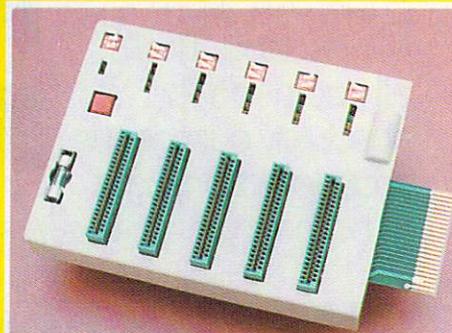
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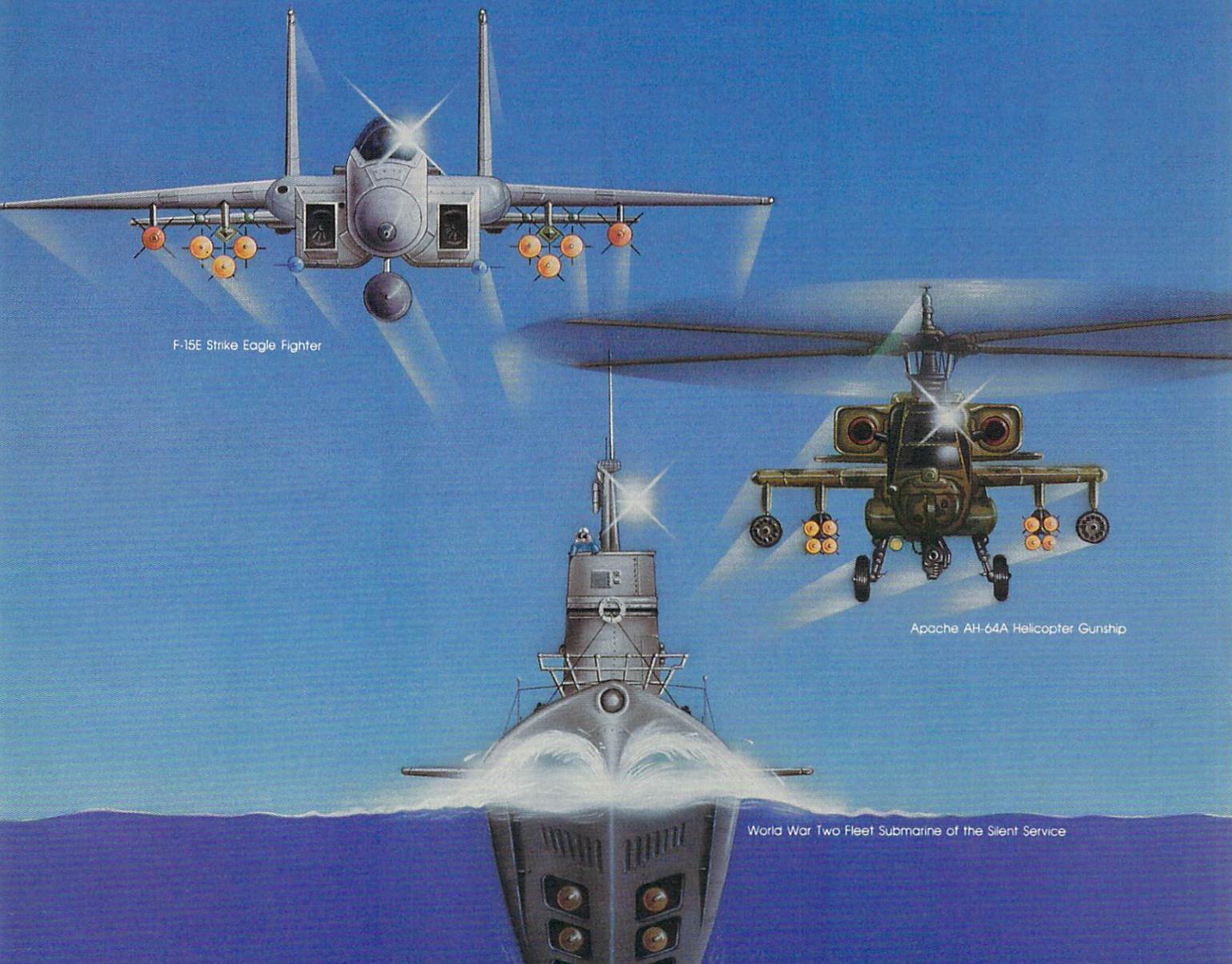
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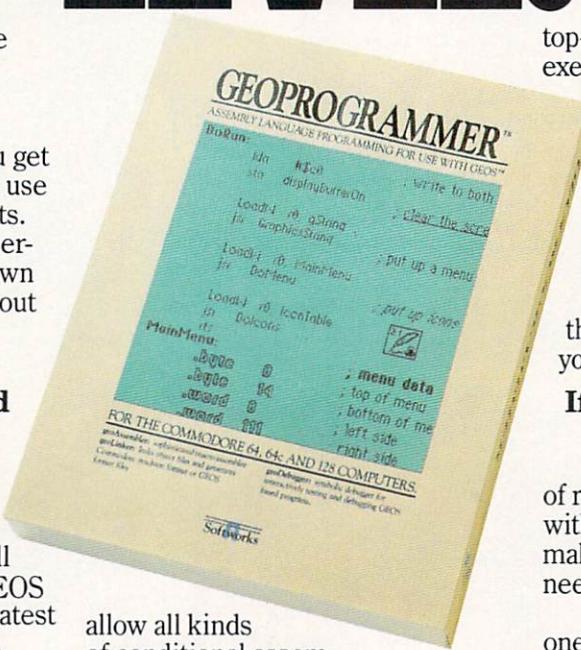
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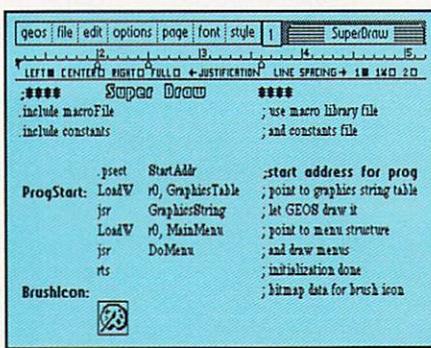
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Benn



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EDITORS' PAGE

THE "BOTTOM LINE" TRAP

This country was settled by men and women with vision, pioneers who could look at the wilderness and see lush cropland, visualize dams and mills on untamed rivers, and imagine empty bays and inlets bustling with ships carrying thousands of as-yet-unmanufactured goods. They didn't expect to see these things all transpire in their lifetimes, but they did expect their children and their children's children to see them. For their part, they bent to the task of felling trees, clearing fields, and building cabins, so the land would begin to take the shape they envisioned.

There have been other visionaries in our history; some have been politicians like Jefferson, philanthropists like Carnegie, or inventors like Tesla. Some have even been businessmen, like the early railroad barons who could keep one eye on the burgeoning profits of their business and the other on the future. They knew that they could build a railroad into an area that was completely desolate, draw people there, and within a few years create trade and profits out of thin air.

We've lost that pioneering business attitude, and I'm afraid that computers have contributed to its demise. A new style of "bottom line" management has sprung up in the last twenty-five years, a management that examines only the immediate potential for profit, the black ink on the bottom line.

Part of the problem is that it's all too easy to use a spreadsheet program to project profits and losses, and to make decisions on the basis of those projections which will affect the lives and fortunes of a great many people. There is a tendency to concentrate too much on the figure that pops up in the "PROFIT/LOSS" window on the bottom line of the spreadsheet. Too often, that bottom line is only a one-year, or even a 6-month or a quarterly projection. If there is a minus sign in front of the figure, it looks pretty scary, especially if you are the one who has to present it to the board of directors. If your pie charts and bar charts and spreadsheet reports all start off in the red, you'll have a hard time

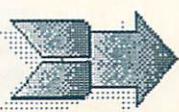
keeping their attention. You might even have a hard time keeping your job.

If the railroad barons had spreadsheeted the westward expansion, it might never have happened. I'm sure the initial investment in track and bridges and rolling stock would have made the bottom line look pretty bad for the first couple of years. And how do you project income from business with a town that doesn't even exist yet?

It's not that spreadsheets themselves are the culprit. They're not. The problem is that they are being used too restrictively and without imagination. Perhaps a new project requires a projection that covers the next decade, not just the next year. Maybe the figure on the "bottom line" should contain a number related in some manner to human potential or community betterment, as well as to profit. Maybe it would even help if the project manager didn't feel his keister was on the line to produce an initial "bottom line" profit. Maybe the CEO and the Chairman of the Board need to communicate the company's desire to pursue sane, worthwhile projects with a more gradual profit curve and the potential for future growth and stability. (Maybe they need air conditioning in Hell, too.)

There is a potential for error involved when you are making any projections with a computer. In the first place, you have to assume that the hardware and the software were both designed perfectly and that they are both functioning properly. Uh-huh. Software, chips, and operating systems don't have version numbers on them just for show. There are always bugs; you just hope and pray that they don't affect the outcome of your particular application. It certainly makes sense to check the results of any projections against some common-sense mental "guesstimates".

Then there are the operator errors--the human ones. You may put the wrong reference in a cell's formula, for instance, or forget to take into account the fact that negating a negative balance produces a positive balance. You could



even just forgot to type in a decimal point. In a recently-dismissed landmark lawsuit case, a contractor tried to sue Lotus for an error he had made himself while setting up his Lotus 1-2-3 spreadsheet, an error which caused him to underbid a project by several hundreds of thousands of dollars. He argued that the software shouldn't have allowed him to make such a stupid and costly mistake.

And that case illustrates another problem prevalent in business: the treatment of "The Computer" as God. There is a widespread belief that, if "The Computer" says something is so, then it *is* so. Anyone who has had to straighten out a computer billing error knows the mentality involved. It's incredible that anyone would believe that because something is stored in a computer system it is automatically true. Besides the obvious hardware and software problems that can and do occur, a *human* had to enter the data in somewhere along the line, and we know how fallible that species is! For the first few weeks, at least, that contractor should have double-checked his estimates using his old methods. He would have found the errors in his spreadsheet, corrected them, and been happily "computerized" and efficient in the future. Instead, he assumed that once it was in the computer, it was to be believed without question. In his mind, his Computer God was infallible.

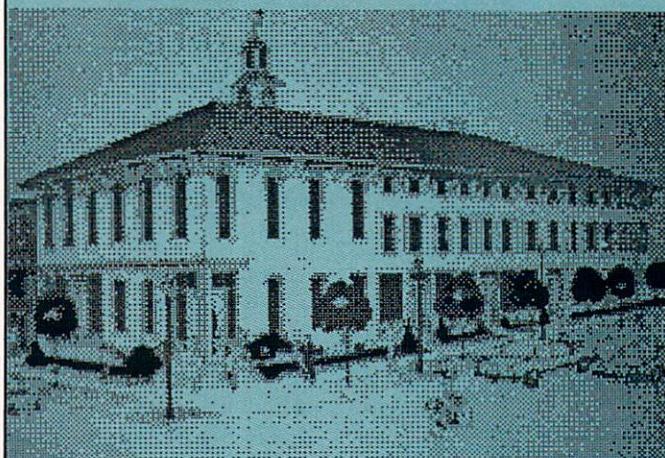
Of course, I'm sure the computer salesman who sold him his system had encouraged this attitude as much as possible. The image of the "Infallible Computer" is good for business, or at least it's good for initial sales. I've never heard a computer salesperson tell a customer to use caution in turning over important aspects of his business to a computer. They never point out the potential for error, both human and machine.

Computers are great business tools, but they are only tools. Like any tool, if you use one wrong you can get hurt. If businesses trust their computers and spreadsheets and projections to make the business decisions that people used to make, then the intuition and spirit and compassion that are needed to run business wisely will be gone. We have already seen many businesses slide into the short-sighted, make-a-buck, bottom-line-management trap. If we don't see some visionaries bucking the system and putting the heart back into American business, its future is bleak.

-Mark & Benn



WE'VE MOVED!



Those of you who have followed the History of INFO articles in the last couple of issues know that INFO has always been located in or near the abode of our publisher. The first issues issued forth from a spare bedroom. Somewhere in the middle they came from a converted chicken shack behind his semi-rural farmhouse. Most recently, INFOs have been created in two spare rooms in his suburban home. Well, all of that has changed. INFO now has *real offices*. The new INFO offices occupy a second-floor suite in Iowa City's newly renovated Brewery Square, a Nineteenth Century brewery on the National Register of Historic Places. We're located in downtown Iowa City just a block from the University of Iowa campus. Don't worry, though: we're still the same old INFO. But we *are* proud of our new facilities, and since we're in a public building now, we can invite you to visit us when you're in Iowa City, which you are quite often, right?

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Mail From: DanD15 QuantumLink

Date: Thursday 25-Jun-87 06:45 edt
 Hi....this is not one of your usual "INFO is great" letters. In fact, I think that you have fallen flat on your face. There are only one or two C128 games out there and you haven't reviewed them. One has been out for about a year (**The Great War** by Free Spirit) and other than a mention in your Product RoundUp you haven't even touched it. (Could it be that you are Hackers and couldn't tell a good or bad game other than a video arcade if it sat on you? I've noticed that you consistently overrate games.) How about hiring a real gamer (read: board wargamer) to do reviews? Have I seen any throwing down the gauntlet to the software houses to do a good C128 game? NO!!

*It just goes to show that you can't win, no matter how much you do! As you point out, we do list all the games we know about for the C128 in the RoundUps. There aren't many, but we aren't about to tell software companies that they should be writing games for the C128 when the combined C64/C128 market is six times larger. With a million C128s out there, I think they'd probably sell a lot of them, but there's a great deal of logic in going for the larger market. We DO give the C128 considerable coverage in INFO, by the way: we reviewed Infocom's **Bureaucracy** (one of the few C128-specific games) in the **Gallery** in issue #15, we've been running a series on C128 wordprocessors, we just featured C128 BASIC compilers last issue, we*

*published ERG-cards for BASIC 8.0, etc. There is a C128-specific article in this issue, with more coming. As to our "over-rating" of games, I think you'll find that we're tougher than the other magazines, and are even consistently harder on games than that excellent independent and fiesty newsletter, **Computer Entertainer**. As to qualifications, Benn has played nearly every game ever released for Commodore computers and for the arcades, is often asked by software companies to provide advice on preliminary game designs, and is a student and an accomplished player of Vegas-type games of chance; Tom is an expert at golf, bridge, and other "mind games", as well as being a world-class adventure gamer; and I have written commercial computer games and board games, and have been a finalist in nationwide traditional D&D game design competition. I think we can handle it.*

-Mark & Benn

Mail From: Jimmy C3 QuantumLink

Date: Saturday 1-Aug-87 00:24 edt
 Hi, I'm currently the owner of a C128 system with the works. Now I want to buy an Amiga. Which machine is better, the A1000 or the A500? What are the differences other than the appearance and price tags? Would I have to get another monitor also? I have a 1902A. How does it compare with the A1080 monitor?

The A1000 currently has more add-on hardware devices available for it, though we expect that to change rapidly. Otherwise, the A500 has an improved internal design, more memory, and a better keyboard. Rumor has it that you may eventually be able to upgrade the A500 to double its current graphics and sound capacity, which you will not be able to do with the A1000. As to the monitor, the 1902 has composite and RGBI video inputs, while the Amiga uses an incompatible RGBA output. The A1000 has a somewhat fuzzy composite output you could use, and the A500 has a monochrome output that should be 1702-compatible, too. For the A500, you could also invest in an RGB-to-composite converter. Commodore is rumored to have one coming, and C Ltd. is shipping one called C-View now for about \$50. This method will probably limit you to 60 rather than 80 columns of text, though. Composite is just not as sharp as RGB. We suggest you get a new monitor, though you could definitely get by for a while with one of the other solutions.

-Mark & Benn

continued on page 78...

DEEP SPACE
Psygnosis c/o CSS
66 Sherman St.
Cambridge MA 02140
(617) 876-2505

INFO-rated



The Psygnosis team has come a long way since their first Amiga title (the underwhelming *Brataccas*); *Deep Space* is my favorite of the new crop. The whole package is a treat, from the delightfully raunchy comic-book in the box to the ultra techno-funky controls and the humorous enemy spacecraft that look like hi-thrust box kites. You play the part of Strix, the owl-headed galactic sociopath bounty hunter, scouring the galaxy causing as much mayhem as possible (especially for Mirfaks) and making your fortune any way you can. First-rate. BD

BARBARIAN
Psygnosis c/o CSS
66 Sherman St.
Cambridge MA 02140
617-876-2505

INFO-rated



Great graphics and animation, detailed creatures, and an intuitive user interface are the high points of this arcade adventure. There are lots of areas to explore in these caves, and the traps and creatures are downright nasty. My favorite parts: your 'Barbarian' looks and overacts just like Arnold you-know-who, and the souls of dying creatures dissipate in a puff of smoke. In need of a Save Game feature, since the only way to find the tricks and traps is to get killed by them and then start the game over. An enjoyable game that requires some patience and really good timing. MB

ARAZOK'S TOMB
Aegis Development
2210 Wilshire Blvd.
Los Angeles, CA 90403
213-392-0735

INFO-rated



Aegis' entry into adventure gaming leaves a lot to be desired. The graphics are well done, and even include a little animation. The parser, though, is pretty unsophisticated; it just doesn't understand enough words and is balky at complex commands. The plot is a peculiar mix of high-tech and magic that would certainly be more fun to explore with a better user interface, and being constantly told you 'failed miserably' to accomplish an action gets depressing after a while. Unless you have lots of patience and a healthy ego, there are better adventures to explore. TM

FIRE POWER
MicroIllusions
17408 Chatsworth St.
Granada Hills, CA 91344
(818) 360-3715

INFO-rated



The first of their new *ONE-ON-ONE* series, *Fire Power* is the ultimate version of capture the flag! Select from 3 tank types, human or computer opponent, local 2-player mode (uses a split screen and 2 joysticks) or remote 2-player mode (via modem and a second Amiga). Scout out the enemy's stronghold dodging drone helicopters and keeping an eye out for valuable fuel dumps. Lay mines for your opponent and overpower his/her forces to capture the flag and bring it back. Extra points for carrying friendly soldiers to safety. Great digitized sounds. Very playable. BD

ALIEN FIRES
Jagware
2-288 Montreal Rd.
Ottawa, Canada K1L 6B9
(613) 744-7746

INFO-rated



Dramatic illustrations and moody music highlight this otherwise familiar maze game involving a cornucopia of alien life-forms in a seemingly endless tangle of rooms and hallways aboard a space station. There is a thin plot about a scientist and a time-twisting device, but this game is really about negotiating (sometimes violently) with aliens, acquiring various objects, surviving the abstract combat sequences, and wandering. One BIG complaint I have with *Alien Fires* is that you must totally reboot the game to resume play after saving your position to disk! BD

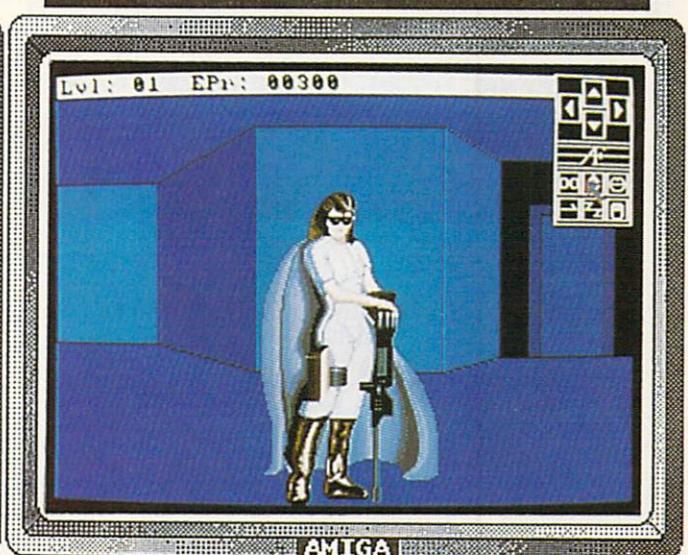
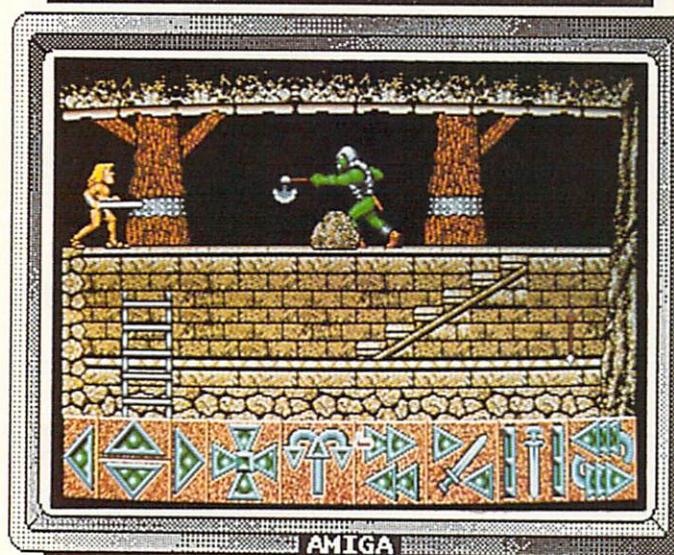
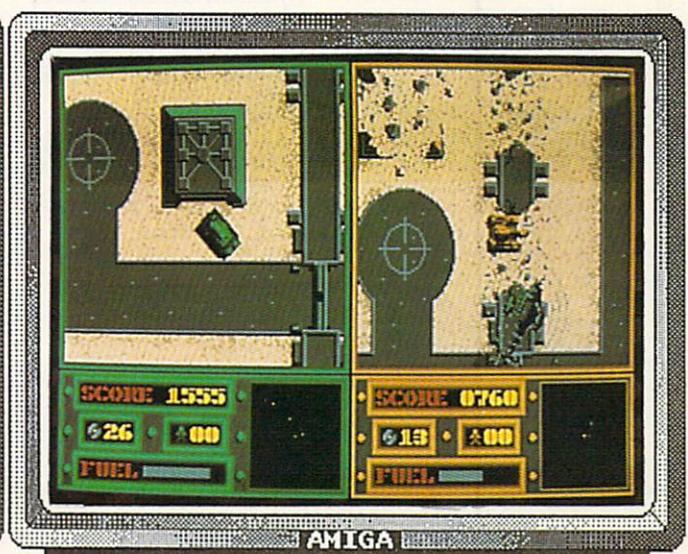
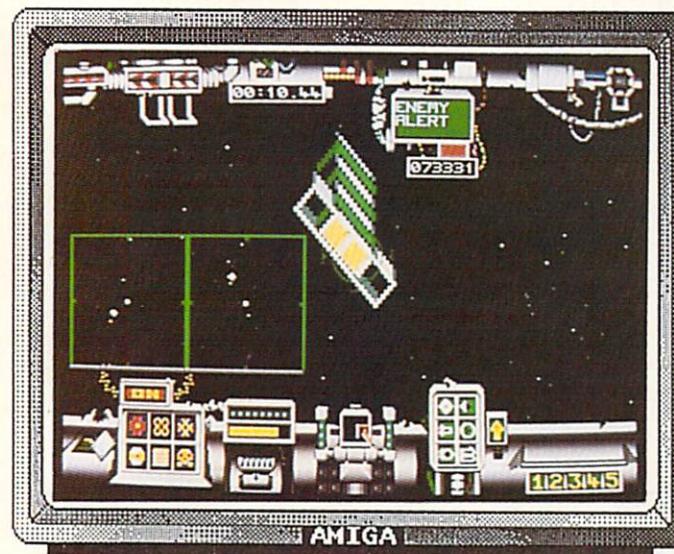
LEISURE SUIT LARRY
Sierra Online
PO Box 485
Coarsegold CA 93614
209-683-6858

INFO-rated



...IN THE LAND OF THE LOUNGE LIZARDS is the rest of the title of this wacky, naughty, adults-only graphic (and we mean graphic!) adventure. It uses the same unique 3D-movement interface as *Kings Quest*. It also has the same blocky lo-res graphics, but the humor of *LSL* more than makes up for that. It's a quick play if you just play to win, but take your time and inspect everything--the authors are nuts! (And I was surprised to find a scenario from an old risqué' Apple text adventure included verbatim.) If you like your games funny, *Larry* is one of the best. MB

THE GALLERY



BLACKJACK ACADEMY
MicroIllusions
17408 Chatsworth St.
Granada Hills, CA 91344
(818) 360-3715

INFO-rated



Blackjack Academy is more than just a good blackjack simulation, it is a school for learning playing & betting strategies, and card-counting. There are many useful options including prevalent rules for Vegas, Reno, Atlantic City, etc., and custom rules to enable matching any real (or imagined!) casino. You may play up to 5 players, and speed of play is variable. Nice graphics and sound, but needs customizable card-counting system (so you can practice the system you choose), and high-speed robot players (so you can assess a given system's performance). Recommended. BD

STRIP POKER
Artworx
1844 Penfield Rd.
Penfield, NY 14526
(716) 385-6120

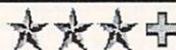
INFO-rated



I'm sure we'll get some letters (we like letters), but so many games have violent themes, that I fear sex is being unfairly ignored (and before you accuse INFO of being one-sidedly chauvinistic, check out pg. 94/95!) This disk is supplied with 2 female opponents of different abilities (Melissa is the better card player). Additional opponents of both sexes are available on separate disks. Beside the obvious attraction, this is the only game for the Amiga that plays a reasonable hand of poker. Final screen is as explicit as 320 X 200 dots allows. Includes modesty switch. BD

WORLD GAMES
Epyx
600 Galveston Drive
Redwood City, CA 94063
(415) 366-0606

INFO-rated



Amiga version of the popular C64 title is mostly set apart by the higher-quality graphics. Otherwise, World Games is a carbon copy of its 8-bit cousin. Choose your team from various nationalities, and practice or compete in either or all of the events which include: Cliff Diving, Sumo Wrestling, Bull Riding, Barrel Jumping, Log Rolling, Weight Lifting, Slalom Skiing, and the ever-popular Caber Toss (when was the last time you saw a GOOD Caber Toss?). Fairly entertaining, but I would like to see Epyx using more of the Amiga's power in these translations. BD

ARENA
Psygnosis c/o CSS
66 Sherman St.
Cambridge MA 02140
(617) 876-2505

INFO-rated



Again, Psygnosis goes one step further, this time in the sports simulation area. Arena is a track & field collection featuring Long Jump, High Jump, Javelin, Shot Put, Pole Vault, and Hundred Meter events. The action and animation is very good, with a user interface that is actually semi-athletic (well, your fingers will get a good workout pounding the left and right sides of the keyboard). As usual with this team, a dash of humor has been injected into this normally dead-pan sporting event (the cartoon guy constantly pesters your athlete!) BD

HARDBALL
Accolade
20813 Stevens Creek Blvd.
Cupertino, CA 95014
(408) 446-5757

INFO-rated



I'm still not a big baseball fan, but Hardball is very good, and as good or better than EA's Earl Weaver Baseball (see Issue #16 pg. 10/11). The slight edge here has to do with the more comfortable user interface and the (in my opinion) better view which focuses on the pitcher and batter with the diamond overviewed in an inset (E.W. Baseball reverses those priorities.) One or two players may participate both as players and as managers. Tinker with the lineup, make substitutions, and watch your players slow down as they become tired. BD

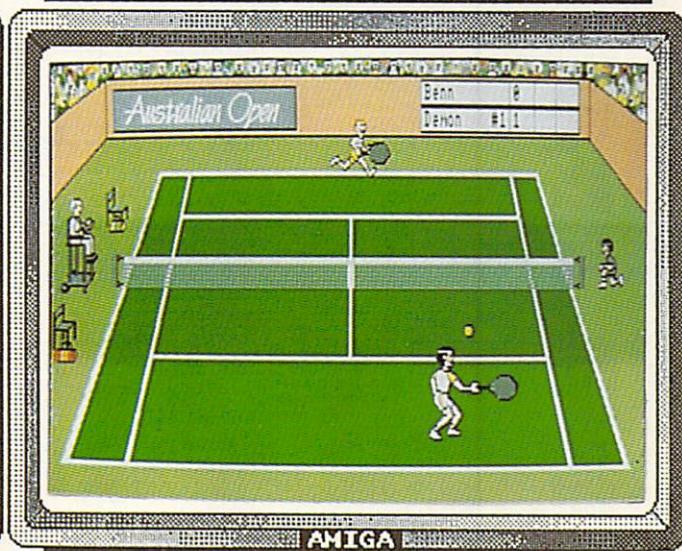
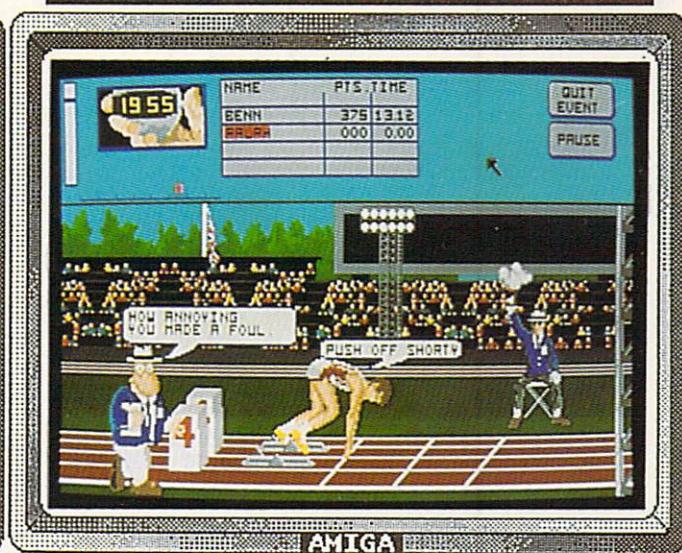
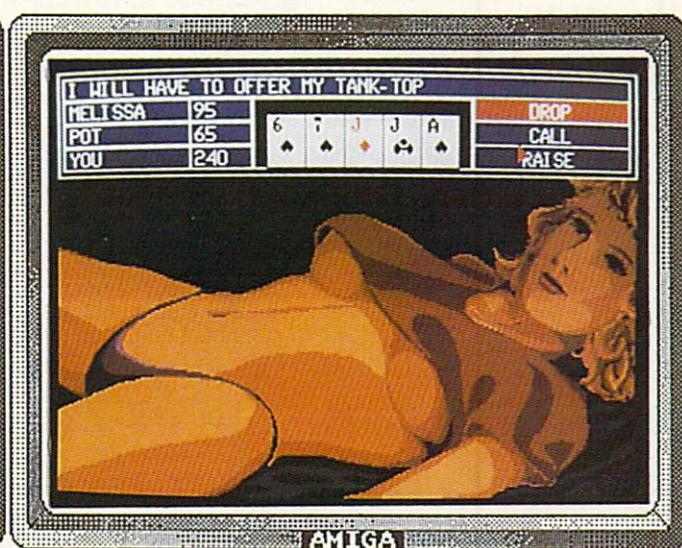
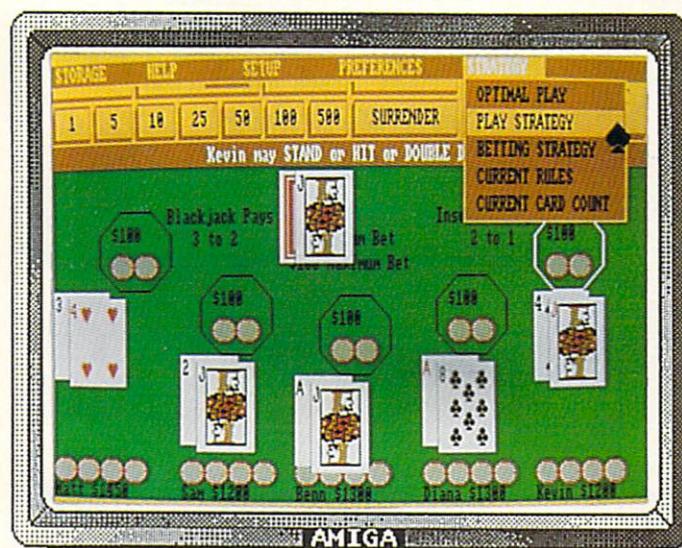
GRAND SLAM
Infinity Software
1331 61st St., Suite F
Emeryville, CA 94608
415-420-1551

INFO-rated



Too many simulations aren't any FUN - this one is. It's a multi-level tennis simulation for anyone from a novice to Boris Becker. Attention to detail makes this a must-have for racquet junkies: like a ballboy to pick up your net shots and a Break menu item that gives you a choice of beverages and the sound of drinking. You can choose your opponent, from Demon to Chiphead, and about any condition can be changed, from racquet type to wind and play speed. There are four tournaments to choose from: Wimbledon, & the French, US, and Australian Opens. -TM

THE GALLERY



THE SURGEON
ISM, Inc.
PO Box 247
Phoenix, MD 21131
301-666-2672

INFO-rated



Definitely not for the squeamish, Surgeon will test your skill at diagnosis and ability to use a scalpel. This is an absolutely realistic simulation where you must make quick, correct decisions to fix an aortic aneurysm. One wrong move and there's a scream followed by the demise of your victim...er...patient. The short manual includes the correct procedures in case you can't figure it out for yourself. The graphics are, well, graphic. Additional diseases would have given this more stars, but once you've mastered the aneurysm, there's nothing left to do.

-TM

LAND OF LEGENDS
MicroIllusions
17408 Chatsworth St.
Granada Hills, CA 91344
(818) 360-3715

INFO-rated

PREVIEW

Exclusive INFO sneak preview! This is a soon-to-be-released dungeon game which has some refreshing new features and looks like it will be lots of fun. One nice effect in our beta copy is the way distant objects and surfaces are dimly lit, becoming naturally brighter and more visible as they come closer. Also new is an on-screen map that is simultaneously revealed as you move thru the maze. When battles occur, a full perspective view fills the screen until the conflict is resolved. More surprises are expected in the finished version.

BD

GUILD OF THIEVES
Firebird
PO Box 49
Ramsey, NJ 07446
201-444-5700

INFO-rated



This sequel to *The Pawn* surpasses its predecessor. The feel is basically the same, but this one has even more wonderfully loony Brit wit. The laugh-out-loud manual alone is worth the price of admission. You are an apprentice thief who must, under the watchful eye of a Master Thief, burgle a castle and the surrounding territories. The static graphics screens are well-rendered and pretty to look at. Encrypted clues are included for those times you're absolutely stuck. For those of us who like text adventures, this is one of the best.

-TM

DARK CASTLE
Three Sixty
2105 S. Bascom Ave./ Ste. 290
Campbell, CA 95008
(408) 879-9144

INFO-rated

PREVIEW

This game is still in an early state of development, but you can see from this screen that it has a distinctive visual quality. The basic concept is the time-tested hero enters successive dangerous dungeons, fights off assorted nasties, solves various procedural riddles and confronts big bad ugly creep who must be taught a lesson. Some of the early rooms look pretty good, and the riddles that we encountered were interesting. We will get back with a full report on these previews in future issues as they become final and enter production.

BD

CROSSWORD CREATOR
Polyglot Software
10431 Ardyce Court
Boise, ID 83704

INFO-rated



When are programmers ever going to learn to test their stuff on normal systems before shoving it out the door? You'll have to reassign fonts and put a copy of Preferences on your copy before you can use it. The program itself is simple and workmanlike - which isn't a bad thing for a tool like this. It displays in either lo-res or interlaced mode for large puzzles. Symmetrical 'outs' (the black squares) are placed automatically, and numbering is taken care of by the touch of a menu. The dictionary and word lists are extremely useful for doing puzzles as well as creating them.

-TM

DIABLO
Classic Compu
510 Rhode Island Ave
Cherry Hill NJ 08002
609-667-2526

INFO-rated

PREVIEW

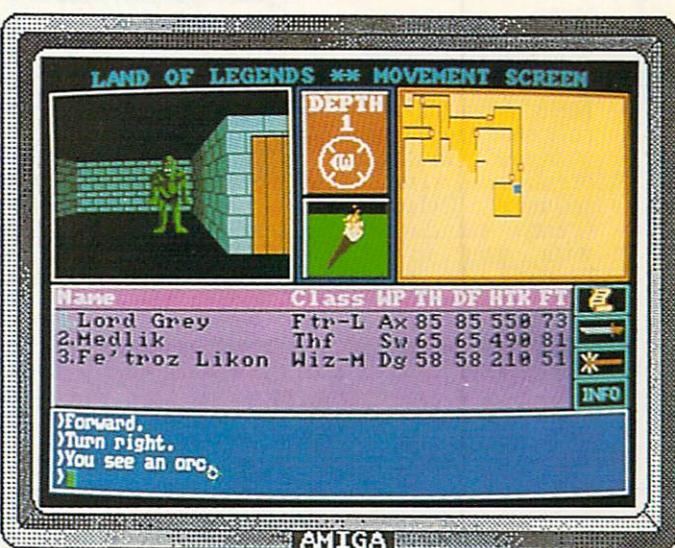
Diablo is one of my favorite Amiga games, so I was delighted when Classic Compu announced it for the C64. The version we have pictured here is still preliminary, without fancy title screens and such, but it plays just great. You use a joystick rather than a mouse to move the tiles in this version. You don't even have to point and click to move--you just move left, right, up, or down, and the proper tiles slide one at a time into the open hole. The ball moves smoothly, and the strategy is the same: don't let it run out of track! An addictive game, and it looks like a nicely done port.

MB

THE GALLERY

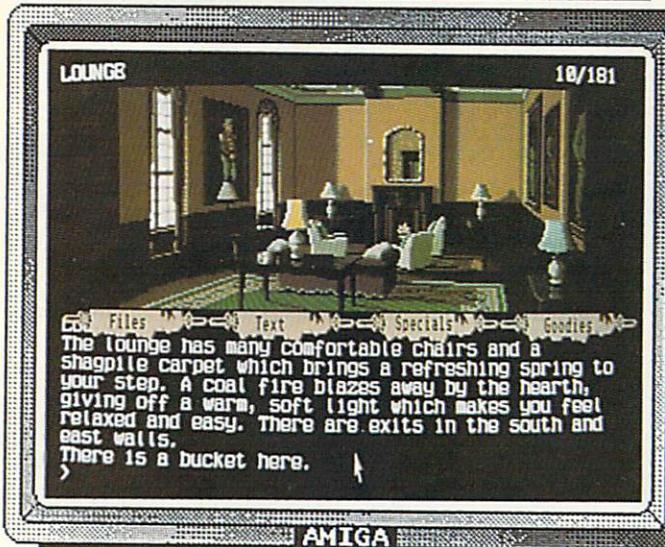


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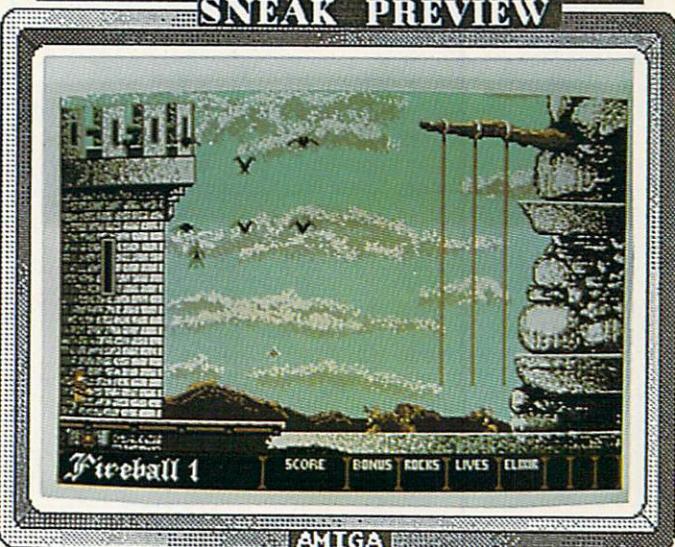


AMIGA

SNEAK PREVIEW

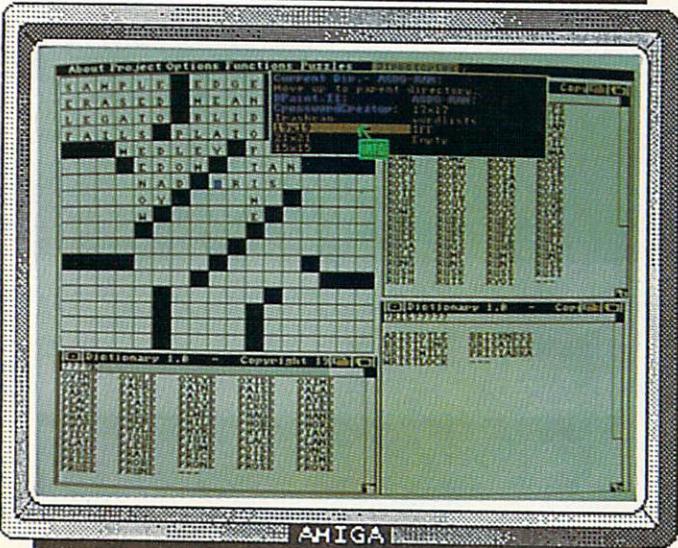


AMIGA

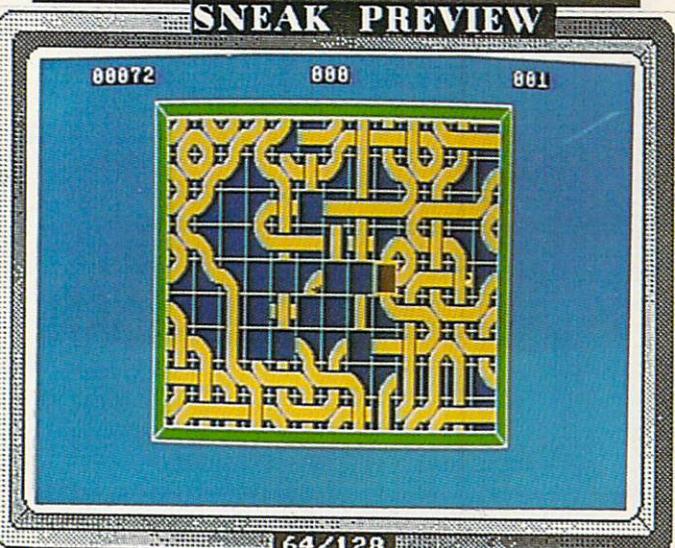


AMIGA

SNEAK PREVIEW



AMIGA



SNEAK PREVIEW

DELTA MAN
Cosmi
415 N. Figuera St.
Wilmington CA 90744
213-835-9687

INFO-rated



Delta Man starts out with a nuclear flash followed by a scene showing a baby in a carriage mutating into a horrible creature. After that rather tasteless sequence, Delta Man settles down into a pretty standard science-fiction game, with you in your robotic spacesuit blasting the poor mutants as you seek food, air, and other supplies in the ruins of Chicago. As far as the game itself goes, the graphics are kind of blocky, but there are a lot of areas to explore and the user interface is unique. Unfortunately, I couldn't mentally get past the title sequence. MB

SUB BATTLE SIMULATOR
Epyx
600 Galveston Drive
Redwood City, CA 94063
(415) 366-0606

INFO-rated



Well, just when you thought it was safe to take the plunge and buy one of the two great submarine simulations on the market (Up Periscope and Silent Service) there are suddenly *three*. I don't know why Epyx thought the world needed another one, but they didn't make the choice any easier. SBS is very similar in most ways to its two competitors, with more emphasis on control features and details (like anti-aircraft guns and planes to use them on), but lighter on the historical and tactical text. The tradeoff for all the detail is slower keyboard response and increased disk access. BD

TOP GUN
Thunder Mountain (Mindscape)
3444 Dundee Road
Northbrook, IL 60062
PHONE

INFO-rated



TOP GUN is a "budget" title which has a bit more going for it than most "rack-jobbed" software. While most of the product cost evidently went into buying the trademark rights from Paramount Pictures, enough was apparently left over to actually write a simple but amusing shoot 'em up. Here's what you get: an F14 Tomcat, cannon, Sidewinder missiles, magnesium decoy flares, a radar screen, and assorted instruments. The missile sight, when held on target long enough, even gives the dreaded "target-lock" alarm just like in the movie! Play the computer, or a human opponent. BD

INTO THE EAGLE'S NEST
Mindscape
3444 Dundee Road
Northbrook, IL 60062
(312) 480-7667

INFO-rated



In spite of the overworked search and destroy theme, I really found this game addictive and even refreshing. Graphics and sound are as good as I've seen on any 64 game, with a smooth control interface that makes Eagles Nest playable by a wide range of age and skill levels. In the process of rescuing prisoners hidden throughout the multi-floored Nazi fortresses, you will need to pick up supplies of ammo and food, shoot open doors and chests, take jewels and other art objects, locate elevator passes, and shoot it out with lots of bad guys. Hours of mindless fun! BD

TOP FUEL ELIMINATOR
Activision/Gamestar
2350 Bayshore Frontage Rd
Mountain View, CA 94043
415-960-0410

INFO-rated



A drag race lasts less than seven seconds. Is it just me, or is it asking too much to expect an event that lasts seven seconds to make a good videogame? I suppose Top Fuel does the job as well as can be expected. This is really a simulation, not an arcade game: you spend all your time fiddling with engine timing and aerodynamics, then test all your preliminary work in a short race. Without the flaming exhaust, the squealing tires, and the smell of burnt rubber, it just doesn't feel like drag racing to me. Drag racing isn't boring. This is. MB

DEEP SPACE
Sir-tech Software
PO Box 245
Ogdensburg, NY 13669
(315) 393-6633

INFO-rated



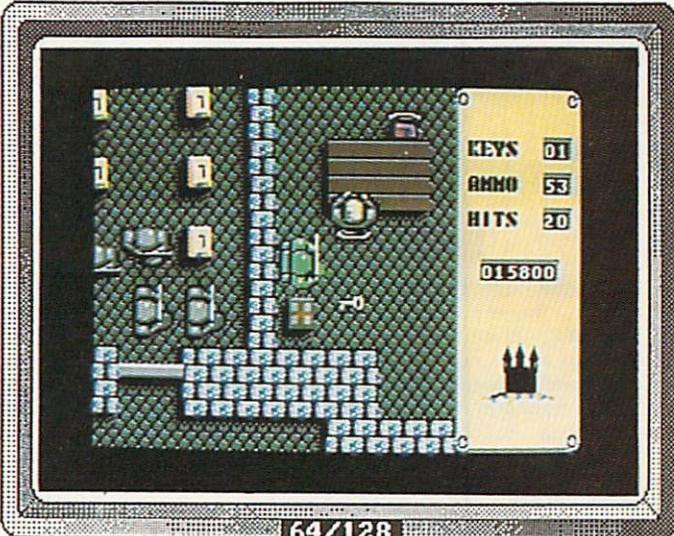
This late entry into the cockpit-simulation sweepstakes (not to be confused with Psygnosis' Amiga game—see page 14/15), with its solid-modelled animated graphics, radar screen, space quadrant maps, drop-down command menu, and top-secret pouch of support documents would have been a hot item a couple of years ago. As it is, however, Deep Space does not have the depth of play or graphics detail to do battle with titles like ELITE (see INFO Gallery #10) or even Sky Fox. And with S.D.I. for the C64 on the horizon, I don't predict a bright future for Deep Space. BD

continued on p. 92

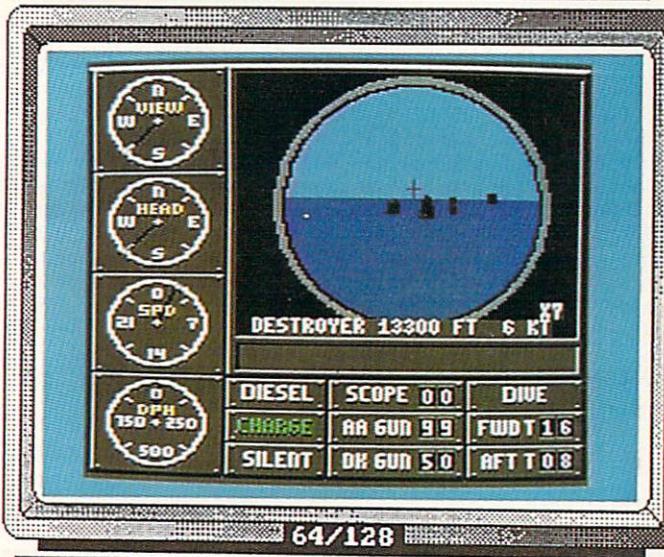
THE GALLERY



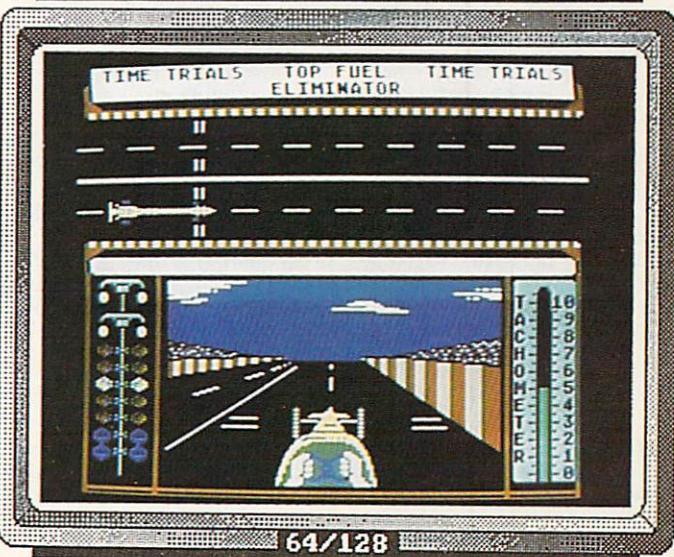
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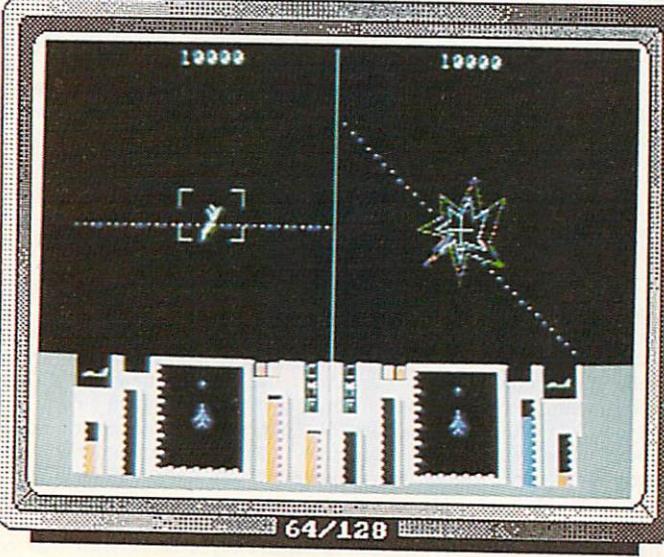
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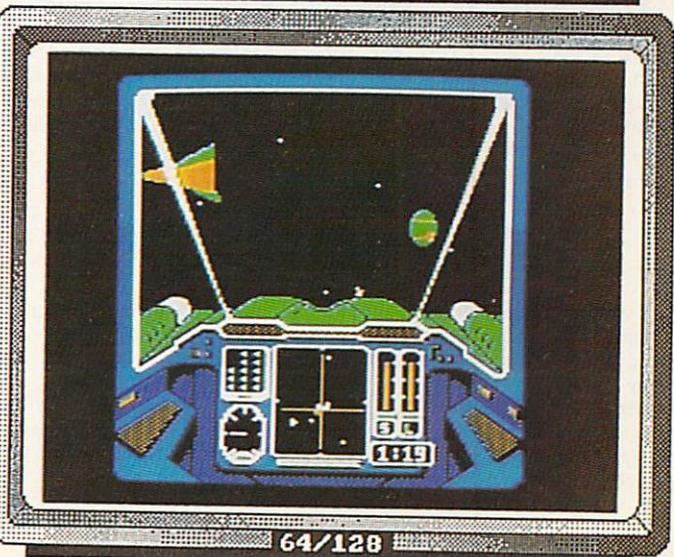
64/128



64/128



64/128



64/128



INFO's Guide to the Best From The Rest

Here's what you've been missing in the other magazines the past couple of months:

The Transactor

The theme of the Sept/Oct Transactor is "Operating Systems". There's a program for adding mouse-driven menus to the C64, which is unfortunately listed in BASIC data-loader format rather than the Transactor's usual informative commented assembly-language listing. Tutorial articles explain some of the C64's KERNAL routines and how garbage collection works, and there are two C128 CP/M+ articles. For Mandelbrot fans, there's an m/l & BASIC hybrid plotting program that works in 40 or 80 columns. Amiga fans can discover how to install a 68010 processor chip in their machine, and there's an article on how to write Amiga tasks that talk to one another. A great issue, as usual. If you can't find the Transactor in your area, their phone number is: 416-764-5273.

Twin Cities 128

If you're serious about using or programming your C128, you need this publication. The latest issue we've seen is #16 (July), and it contains a compendium of over 200 C128-specific products, with prices and vendor addresses. In addition, articles cover m/l programming, C128 graphics, current "street prices", and modifying CP/M for use with the 1581. All in 24 pages! Sample copies are \$2.50 from: TC128, Box 4625, St. Paul MN 55104.

COMAL Today

If you're a computer teacher or a personal programmer and you haven't discovered COMAL, get in touch with the COMAL Users Group immediately. You are driving yourself needlessly crazy! Len Lindsay's COMAL Today always looks and reads great, and there's always a bunch of fascinating programs. Issue #18 has a Mandelbrot program that is only 55 lines long. I typed it in, it worked the first time, and it's the only Mandelbrot program I've seen in a high-level language that will generate a decent screen in less than two hours: and this is on a C64! Sample copies are \$3.95 from: COMAL Users Group, 6041 Monona Dr., Madison WI 53716 (608-222-4432).

FAMILY COMPUTING

I'm not really convinced that any of the general-purpose computer magazines ever feature enough on one specific computer to justify anyone buying them, unless they are still shopping around for a computer. But if you're looking for a laptop, the August Family Computing has a rundown on the dozen or so top models. If you have a friend who's stuck with a discontinued Coleco Adam or TI 99/4A computer, you might recommend FC to them. It is the only magazine left that supports those computers with type-in programs, and the little ads in the back still offer some TI and Adam software for sale.

COMPUTE!

The August COMPUTE! has a house ad offering a sample of the COMPUTE! Disk for only \$1.95. If you want to see what some of their programs look like firsthand, you might want to give the special offer a try. There's a type-in fractal landscape program in Amiga BASIC in the same issue. There are 8 articles relating in some way to Commodore computers, and 10 more in the September issue. About 2/3 are type-in programs and 1/3 are product reviews.

Ahoy!

Ahoy! has suffered some setbacks the last couple of months. Senior Editor Tim Little quit to go to work for Electronic Arts, and he hasn't been replaced yet; and a "cash flow squeeze" has caused Ahoy! to drop support of their on-line area in QLink's Magazine Rack section. Fortunately for them and their readers, the sysop of that area, Captain BW, has decided to take the task on his own shoulders without pay. Mort Kevelson's work is still right up with the best in the industry (he scooped INFO with his great review of Butcher for the Amiga in Sept.!) MSD drive owners don't want to miss Mort's look at 3 MSD-specific products in the Sept. Ahoy! Dale Rupert compares the C128 (favorably, of course!) to the PC clones in that issue, too. In October he looks at data structures. Mort examines BASIC 8.0 for the C128 and C Ltd's Timesaver for the Amiga in that issue. The rest of both issues are filled with various type-in (mostly hexadecimal) games and utilities.

COMPUTE!'S GAZETTE

CG's GEOS column debuted in the September issue. Get used to seeing them—Commodore is pushing all the Commodore mags to start GEOS columns. Their "Name Your Dream Sweepstakes!!!" in that issue suggested four possible grand prize dream computer systems: Atari 1040ST, Apple Macintosh SE, IBM PS/2 model 50,...? We had to look hard to find the one Commodore system (an Amiga 2000, naturally) in the list. This from a Commodore-specific magazine? The October issue devotes a good many pages to Speedscript in 80 columns for the C128.

commodore

There's a good feature by Dan Gutman in the Sept. Commodore called "What Happened to the Computer Revolution?". It's good reading. The Sept. issue also contains installments 2 and 6, respectively, of the MIDI and C Programming tutorial series. Graham Kinsey continues with another listing of PD software for the Amiga. If the "Commodore 64 Compressor" in that issue looks familiar, it's because the same program was published in the March issue of Ahoy! Contractual foul-ups resulted in both magazines running it. (Frankly, I'm surprised it doesn't happen more often.) The Oct. issue has installment 7 of the C tutorial, installment 5 of

John Iovine's series on hardware hacking Commodore 8-bit machines, and part 7 of the AmigaBASIC tutorial. If you are interested in game design, two interesting articles delve into the design of Shanghai and Defender of the Crown. As always, there are some short BASIC type-in programs in each issue.



The Sept./Oct. issue is supposed to be the last bimonthly issue of AmigaWorld. From here on out, you'll be seeing it monthly. If you are a programmer, you'll enjoy the five (5) articles in this issue devoted to the minutiae of programming the Amiga in C, assembly, and BASIC.

RUN

Matthew Stern's GEOS column debuted in the August issue of Run. I was fascinated with Bob Guerra's rundown of 7 C64 wordprocessors in that issue: two of them actually got blasted pretty badly! Let's hope this is the start of the spread of Honest Journalism in this industry. Not only that, but three of the programs in the issue were in listable, learnable BASIC! (And we love those easy-to-read barred-paper listings!) It is, without doubt, the best issue Run has done in months. A house ad in the September issue advertises a 64-page booklet collecting the "Best of Magic" that should, if it's really the "best", be worth the \$4.95/copy they're asking. Most of the rest of Sept. consists of rehashes of old topics. (Redefining C64 function keys? Don't tell me that's been done before!?)

BYTE

The August Byte concentrates on Prolog (the Artificial Intelligence language) and hardware and software for 80386 computers. There's a nice article in this issue on dragon curves. The first thing we noticed in the Sept. Byte was the omission of the Amiga and Atari ST listings from the Best of BIX section--what happened? Let's hope they aren't gone for good. This issue focuses on printer technologies, but also includes an introduction to IBM's new OS/2 operating system. Is it just us, or does Byte seem to be devoting less space to the 68000 family lately and drifting deeper into 80386 and high-end PC-compatible territory?

ROBO CITY NEWS

FIRST AMIGA USERS GROUP

Robo City bounced back in the June/July issue with a comprehensive index of Amiga reviews from AmigaWorld, RoboCity, Amazing Computing, and INFO, among others. It's great, and should save us a lot of work when we finally get together an index of our own. Thanks, guys! There are

also some fine reviews, and Bryce Nesbitt and Hans Gregory present a list of known bugs for version 1.2 of the Amiga's operating system.

COMPUTER SHOPPER®

Ted Drude takes a look at some monitor alternatives for the Amiga in the July issue of CS. If you can find them in this 500+ page tome, there are 14 articles of CBM interest in this issue. There are 11 in August, plus a look at a rather fascinating stereo 3D CAD program for the Atari ST. The BBS listings in each issue are great for telecommunications fans. Honestly, though, the Shopper is getting so big that I find it really hard to read.

Amazing Computing™

Volume 2/Number 9 concentrates on productivity and the Amiga, with reviews of lots of productivity titles. There's also an excellent article on AmigaDOS and its shortcomings by Dave Haynie, who ought to know. Don Hicks' editorial chastising software pirates is right on the mark. Another great Amazing, as usual.

MISCELLANEOUS

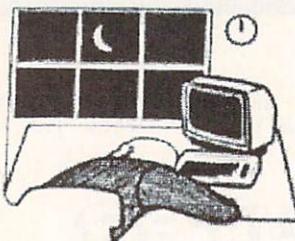
SCIENTIFIC AMERICAN's Computer Recreations column remains a great source of inspiration for Saturday programmers seeking something to do with their computer. There's always a new challenge. I see that in Sept. SA finally succumbed to the "New Look" that's passing through the publishing industry and redesigned their magazine. That issue features the first scientific report issued to the public by the scientists researching the feasibility of SDI. It's informative reading.

We've said it before, but it's worth repeating: if you use GEOS, you'll love GEOWORLD. \$10 gets you 6 issues from: GEOWORLD, 38 Santa Ynez St., Santa Barbara CA 93103.

Now that we've hit a true bimonthly schedule, the mostly-bimonthlies don't always make it here between one issue and the next. But issue #4 of Money Machine Magazine should be out by the time you read this. Don Vandeveenter tells us it will have reviews of RAM expanders, Multiplan, and Timefile for the 64/128, and Publisher, City Desk, and Word Perfect for the Amiga, as well as an article on 300 business ideas for the home, among other things.



Midnite Software Gazette



STAR TREK:

The Recollections of an Old Commodore Trekkie

by James Oldfield, Jr.

The opinions expressed in this column are those of the author, and do not necessarily represent those of INFO Publications, Inc., our staff, our lawyers, or any other living human being.

Let's begin by giving credit where credit is due. Star Trek is a registered trademark of Paramount Pictures, and was conceived by a LEGEND named Gene Roddenberry. All references to that name in this article only reflect my respect for his ingenious invention: Star Trek. The same applies to the starship Enterprise, Klingons, Romulans, Captain Kirk, Spock and the like. I'm not so sure about Tribbles, though.

In the entire brief history of personal computing, no single computer game exemplifies the flavor of home computing better than Star Trek. I've had a version of Star Trek for every computer I've ever owned. (Even my Tandy Model 100 laptop has a trimmed down version I play once in a while.) I've never really figured out why it is, but the two seem to be a natural pair. I would even guess that somewhere in the databanks of the huge mainframes in corporate computer rooms you will probably find a Star Trek game stored away to be played in off-hours. And with the explosion of telecommunications you can play for hours on-line, Star Trekking with others across the country.

My first encounter with a Star Trek game was on a homebrew computer owned by an old friend, Fred Bowen. Fred brought his 8080-based system to a big (6 people) local computer meeting and showed off a new program: a Star Trek game! Bear in mind that in 1976 it took between six and ten minutes to load the BASIC interpreter, and at least twice that long to load the game. When it finally ran, I was spellbound-- I had never seen anything like it before. I'm sure my fingerprints are still on his keyboard where he had to pry me loose that night. It was great, and I was hooked.

THE FUNDAMENTALS

For those who haven't played Star Trek, maybe a quick run-down of some fundamentals is in order. Basically, the object of Star Trek is to rid your galaxy of nasties such as Klingons, Romulans, and whatever. This must be done within a certain amount of time. The early programs had the bad guys shoot only after you

moved or invoked a command. Graphics were what you would now call 'crude', but Trekkies like me didn't mind having the Enterprise appear as an 'E' and Klingons as 'K's. ('*'s were stars and a starbase was a 'B'.) For weapons you had photon torpedos and phasers. It took longer to destroy an enemy ship with phasers, so I rarely used them. (And torpedos looked good tracking to their destructive destination...) Your 'galaxy' was mapped out in sectors and quadrants. Commands used included S for shield maintenance, W for warping around the galaxy, I for impulse power for traveling within a sector, T for torpedoes, P for phasers, R to redraw the screen, and my favorite option, the on-board computer. The computers in early versions of Trek only had three sub-commands: short range sensors, long range sensors, and calculating torpedo trajectories. Your only defense against the sinister Klingons was your shields. Normally you would press S and tell the computer how much energy to divert to the shields, the catch being that the ship's energy was limited. That gave you a good reason to find the starbases placed somewhere in the galaxy. Once 'docked', you could replenish your energy level and go back to the serious business of Trekking.

Back in the days of my original PET, late in the evenings my family could hear the strange ominous clicks and buzzes from my old machine and an occasional whoop from me as I saved the universe from those nasty ol' Klingons! From then 'till now I've played and loved many, many Trek games. Some that stand out are mentioned here. I'm sure I've missed some, and if you know of more Trek games floating around in the sea of public domain software, let me know.

PET TREKS

The first Trek game that I bought for my PET was Star Trek 2, from Len Lindsay's user group. It had all the features mentioned above. About the same time I also got one from Gene Beal's PUG library which was very similar. I believe TPUG's version of Star Trek was originally done by Jim Butterfield and was

expanded upon by countless authors. It later became known as *Super Star Trek*.

In those days of tiny ads, many Star Treks were offered for sale. One of the first was from Dad's Software, titled *World's Greatest Star Trek*. Of course, it wasn't, but in those days few people worried about minor details like that. Instant Software (a Wayne Green enterprise) had a good game called *Trek X!*. In that version, the baddies chased and shot at you in *real-time* (a big deal back then). It had a simulated screen like the TV series that displayed all the action and goings on. I think my review of *Trek X!* in *Midnite* was probably the first one in which I made the now redundant remark: '*Good sound and graphics, highly recommended.*' That comment became almost as common as Doctor McCoy's diagnosis of "He's dead, Jim," on the *Star Trek* TV show.

Personal Software (which later became VisiCorp) released an excellent version by Brad Templeton called *Time Trek*. It had a machine language component (a rarity back then), and added extras such as difficulty levels and moving Klingons that shot back *quickly*. It was a tough one to beat at the top levels. This *Trek* game kept me hooked the longest, until *Trek 80*.

Trek 80 was written by a gentleman named Bruce Berry for the TRS-80 computer, and he decided to bring it out for the PET. He didn't know Commodore's machines so he commissioned Jim Strasma to convert it. Jim added lots of details that weren't in the original, and by the time he was done it took *all* of the PET's 32K to run it. I had a blast play-testing a *Trek* game that I helped shape! Needless to say, I had Strasma working *late* adding all the features I could invent. He decided that the game should have a little more substance, and made it so that you had to defend your starbases and six 'tugs' that supplied them with energy. If you lost all your tugs the game was over. Besides Klingons, you also had Super Klingons to contend with. These guys had cloaking devices, which made them invisible, and twice as much energy. They were tough to spot, but it didn't take long to figure out they were in your sector! The on-board computer had so many commands that it took up a whole screen of its own. Graphics were text-based, but the strategy and planning were extremely enjoyable.

C64 TREKS

When the Commodore 64 appeared it didn't take long for hackers to convert the *Trek* games over to it. Among the first (and still one of the best) was the *Star Trek* released to the public

If you're on QLink, join Jim Oldfield, Mark Brown, and Bob Baker for the *INFO/Midnite Forum*. We convene in the QLink Auditorium the second Friday of every month, at 10 p.m. Eastern Time.

domain by Solidus Corp. It featured all the commands known to computer Trekkies and also made good use of the C64's sound and color capabilities. It had to be one of the best advertisements that I have ever seen!

Sometime later the coin-op giant SEGA released their *STAR TREK* for the C64. It was the first *Trek* game that actually got permission (that is, paid a fee) from the trademark owners to use the name. Most of the commercial *Trek* games had different names for the characters and objects within the game. But we knew what they were!

The most elaborate *Trek* game that I've played to date is Interstel's *Star Fleet I*, distributed by Electronic Arts. Graphics are adequate, and the list of features goes on and on! There are thirteen star systems to explore and protect, and thirty-six different starships to choose from. Tractor beams, transporters and space marines are available for capturing and towing enemy vessels--it's no longer necessary just to destroy! It's an excellent simulation of space battle and conquest: I recommend this game to all Commodore 64 Trekkies. A similar version is available for the Amiga.

Simon and Schuster Software also released two *Star Trek* games, *The Kobayashi Alternative* and *The Promethean Prophecy*, but they are adventure games, and I'm not sure I would recommend them. Adventure games are great, but *Star Trek* is *Star Trek*.

It was fun recollecting about the Commodore computing side of *Star Trek*. I'm sure I've missed some versions, and others I've glossed over. Most of you *Trek* gamers have your favorites as well. As a matter of fact, I think I'll dust off my PET one more time. After all, this galaxy does need protecting.

Jim Oldfield Jr.



ABOUT THE AUTHOR:

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The Real World

INFO's *Real World* column is an ongoing attempt to bring you news flashes, insights, and information from that world inhabited by humans who don't own computers--the *Real World*.

ROBOCOP

When we first saw the TV commercials for *Robocop*, we figured it was another blood-and-gore, comic-book-plot, junior-high-level exploitation movie. But when Siskel and Ebert both liked it (a rarity anymore), we decided to take a look. It turned out to be one of those movies that's better than it has to be. Much better. While it has the expected comic-book look, and enough gratuitous violence to satisfy most junior-high boys, there is also a decent good-triumphs-over-evil plot, a great script with nicely balanced elements of both ethos and pathos (as well as some very funny lines), some good acting, and great special effects. Benn and Tom and I thoroughly enjoyed ourselves. The movie biz being what it is, it's probably still playing in the major cities and the drive-in circuit, and you should be able to rent it on videotape soon. Take a look; you'll enjoy it.

READ THIS, BRYCE

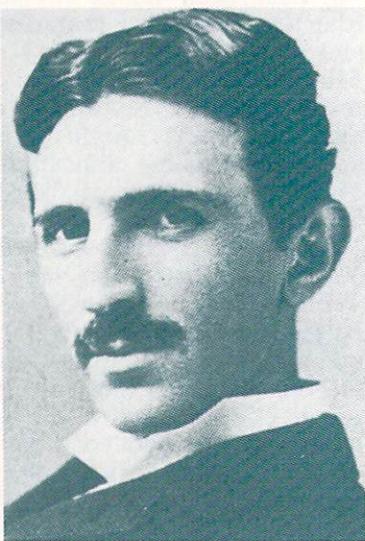
Bryce, your mom called and wanted us to let you know she misses you and would like to talk to you. She's downstairs in the kitchen.

STAR TREK: THE NEW VOYAGES

The first of October, *Star Trek* returned to television, this time without Spock, Kirk, McCoy, Scotty, or, indeed, any of the original crew. Of course, as I write this the syndicated show hasn't aired yet, but I've seen the commercials, and the designs, characters, and special effects look promising. Choke back the tears and try not to think about the original crew now playing shuffleboard at the Star Fleet Retirement Village in Taos, New Mexico. Give the new series a look. I know I will. (Check your local listings.)

TESLA

Nikola Tesla is a legendary figure: the developer of AC power transmission, the true inventor of radio, and the visionary who pioneered work in high-frequency, high-energy physics, including particle beams. In his day, he commanded more of the attention of the popular press than all of his contemporaries combined, and that list included Edison and Marconi! Unfortunately, he fell from favor in his later years and was almost forgotten by the general public, though science historians rank him among the greatest influences on the modern age. Unfortunately, very little has been known about this mysterious man except what was contained in a somewhat apocryphal biography written by an acquaintance shortly after his death. Margaret Cheney and Dell Books have changed all that with the release of *Tesla: Man Out of Time*, an excellent and extremely well-researched biography. It chronicles his life in great detail, from his childhood in Yugoslavia to the current whereabouts of some of his most secretive and far-reaching work (the papers are in the hands of the U.S. government and are still classified, 40+ years after his death). If you have five bucks for the cover price and a few nights you can devote to reading, this book is sheer fascination.



THE DARK KNIGHT

If you enjoyed Batman comics when you were a kid, the odds are real good that you will fall in love with DC Comics' *Dark Knight* series of comic novels. These adult tales of the Batman occur in a bizarre near-future where superheroes have been outlawed. But Bruce Wayne, fed up with the evil elements in society, defies the ban (and Superman) to clean up Gotham City. Frank Miller's story is strange, disturbing, and very compelling, and his artwork is superb. It's available as four 48-page booklets for \$2.95 a volume, or as a single volume called *The Dark Knight Returns* for \$12.95.

END USER MAKES GOOD! WORKS IN BIG COMPUTER COMPANY!

by Mindy Skelton

How does an avowed non-hacker go from real estate appraiser to end-user to computer executive? Is it an '80's computerized version of the American Dream? Nope, it's just the real-life travels of Paul Montgomery. Tracking down Montgomery took a little doing, as this man lives a jet age lifestyle. He flies back and forth between California, where he is a founding member of F.A.U.G. (the First Amiga User Group) and co-editor of their magazine, Robo City News, and Kansas, where he is vice-president of marketing for NewTek, a purveyor of Amiga graphics software and hardware (the DigiView people). In this INFO Interview, Montgomery takes some time out of his hectic cross-country schedule to share some views and reminiscences from his years of involvement with the Amiga.

INFO: *Mr. Montgomery, if someone had asked you to predict 7 years ago what your life would be like today, do you think you would even have come close?*

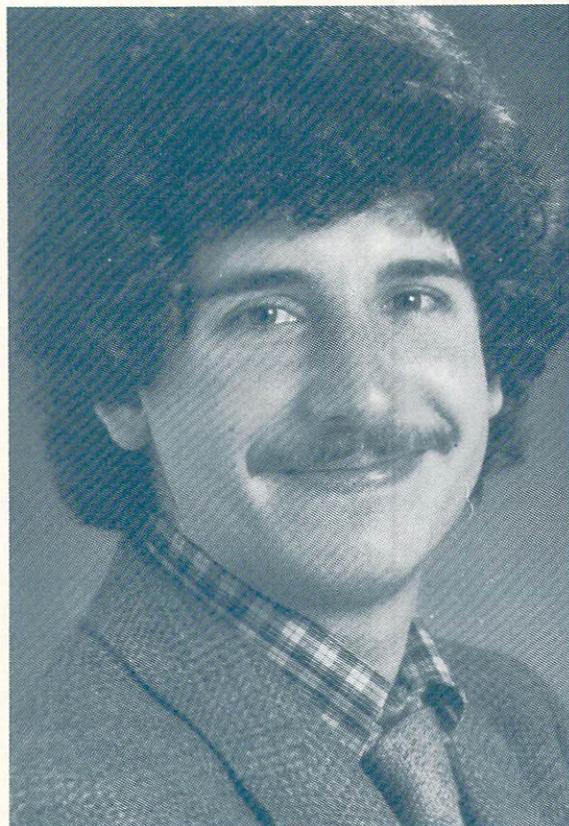
MONTGOMERY: Not at all. What you had then was a guy who started in real estate with no marketing or computer experience at all. Then he developed this intense interest in the Amiga computer and all of a sudden his life is changed; he's moved and he's doing things he never in his wildest dreams thought he would do.

INFO: *What happened?*

MONTGOMERY: Up until about 1985 I operated a real estate appraisal business. Then I read a BYTE magazine article about the Amiga and for some reason, reading that article really got me going. It was like love at first sight and I became intensely interested. I think I owned the first Amiga in Santa Clara county, which is where I live, in Silicon Valley. I was at the store the first day the Amigas came in. I had ordered one a month earlier, paid a big deposit, been on a waiting list, and finally prepaid the whole thing. When it came in, I was there.

INFO: *How did you get from there to F.A.U.G.?*

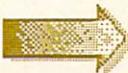
MONTGOMERY: I had decided to start a users group in San Jose. I was working on that when I heard about a smaller group - a Commodore 64 and 128 group that was starting a small Amiga meeting in San Mateo. I went up to the user



group along with a friend from Amiga, and I saw that they had a lot of potential. It was a small group run by Kayvan Pejoo and Tim Avery, who had actually started this group called the First Amiga Users Group (F.A.U.G.). I approached Tim and said, "Hey, I see some areas where you guys could use some help. Let's talk about me joining up and helping you instead of me doing a group in San Jose. I'll give you the support here." That was the start of our three person partnership.

INFO: *So it's very likely that you really were the first Amiga user group?*

MONTGOMERY: I think we were the first major Amiga group. I know there was a lot of, you know, three or four people getting together, but by our third meeting we already had two or three hundred people. I think one of the things that made it really exciting was that we had a lot of interested non-Amiga owners who had been reading and hearing about the Amiga and were anxious to learn more.



Paul Montgomery continued

INFO: *I understand some of the other early F.A.U.G. members were actually on the design team for the Amiga.*

MONTGOMERY: As a matter of fact, the very first paid member was Jay Miner, who is The Father Of The Amiga and the designer of the custom chipset. He eventually went on to become the general manager of Amiga in Los Gatos. Additionally, we had R.J. Mical, Dale Luck, and Bob Pariseau. Really, anyone who was in any way involved in the development of the Amiga in Los Gatos would drive the 30 miles or so to F.A.U.G. to attend out meetings. From the very beginning we had the entire design team for access to our members.

INFO: *Most Commodore or Amiga users would kill to have members like that in their group. How did you manage to attract members of such a high calibre?*

MONTGOMERY: Well...there's an interesting story on that. I had bought my Amiga, brought it home, and it wouldn't quite work right the first night I had it. I had planned to show it to a whole bunch of people that weekend so I called the store and said, "Gee, I really need this to work. I just spent over two thousand dollars and I'm really upset. Please help me." The salesman said, "We don't really have a service center here, but one of the Amiga engineers was down here the other day and he said if I had any trouble to give him a call," so he gave me the phone number of a person at Commodore Amiga. I called the engineer and he said, "Well, we don't usually do this, but since you're the first one to call, bring it on down here and we'll take a look at it." I went on down there... it was at that point sorta like seeing the Holy Grail to go to the building where the machine had been created. I went in, talked to the guy, and we hit it off right away. Through that contact, I met the other people at Amiga and invited them to the F.A.U.G.. I even posted little flyers on their bulletin board about F.A.U.G. That's how Jay Miner got to be the first member. It was a very lucky break and I think that was the start of my illustrious career in Amiga and marketing.

INFO: *What was it about the Amiga that got you more excited and involved than any of the other computers on the market could?*

MONTGOMERY: One of the employees of the company where I work has a theory: Pretty pictures sell computers. You go into a store and you see the pretty pictures and then you want to

buy the machine. I think to some degree that's true, because when I saw the graphic screen shots of the Amiga and then read about its stereo capabilities, it sounded like the perfect machine for Paul Montgomery. I was a pretty established videophile by that time, I had an 8-foot TV, a very expensive stereo system, a laser disk player, and a hi-fi surround sound system. I was ready for a high-tech computer that would match my system. I think that the Amiga was the first computer to really fit into this new high-tech video/stereo age. It had all the right stuff to be part of a system like I already had. I was not a computer hacker waiting to happen. Actually, the computer technology finally got up to the point where it would excite someone like myself: a videophile who was not into spending four hours programming in order to see a couple of pixels from an eight-color palette race across a screen.

INFO: *The video aspect obviously still interests you or you wouldn't be working where you are.*

MONTGOMERY: I think video has been the most exciting application for the Amiga. I was, from the early days, behind the whole desktop video movement that is now starting to push the Amiga into its niche. That whole movement is still very important to me, and I'd say we've just seen the tip of the iceberg to this point.

INFO: *The Amiga was introduced as a premiere graphics machine, and software to take advantage of that is finally starting to be available. What do you see as the next step in the process of full utilization of the Amiga's graphic capabilities? Where is it going?*

MONTGOMERY: The quality of the video products is improving, at least the ones on the drawing boards and the ones being announced. I think, as a result, the Amiga will be used on television more often. Right now there are 30 or 40 stations that use the Amiga daily, either on the news or other aspects of television broadcasting. But in the not too distant future, there will be broadcast quality genlocks available. They will be a little more expensive than the one released by Commodore, but suddenly the Amiga will be attractive to all stations, because the output will be broadcast quality.

I see special effects being done through the Amiga. When we watch TV, a lot of things that we take for granted, like ADO (Ampex Digital Optics), which is where you see the screen go from a large screen to a very small screen, have

continued on page 69...

THE FIRST--THE BEST

A SHORT HISTORY OF COMMODORE 64 AND AMIGA GAMES

...In the beginning was Colossal Cave. And Colossal Cave begat Star Trek, and Star Trek begat Space War, and Space War begat Pong. And Pong triumphed over Pinball and established Arcades in the Malls of the land. And the descendants of Pong were more numerous than the grains of sand in the sea.

And men etched powerful code upon chips, and yea, the Micro appeared. And the Micro multiplied, and its numbers were great. And the mightiest of these was called Commodore, and its games were many...

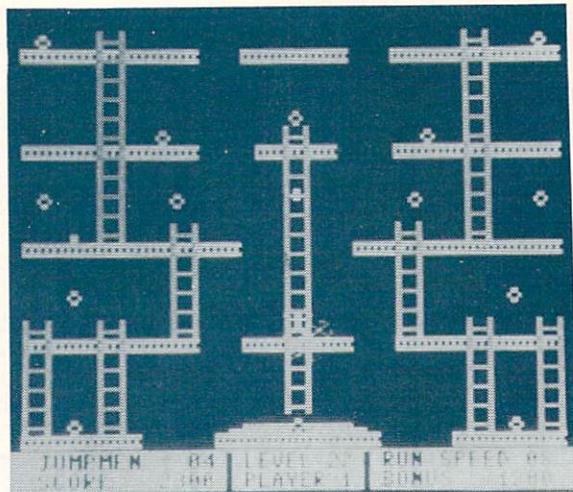
When the Commodore 64 was first announced everyone knew it was going to be a killer game machine. The only question was who would come out with the games first, and what would they be?

There was a lot of potential, because there are so many different types of games. There are strategy simulations like Star Trek, "computerized" versions of traditional games like battleship and chess, and text and graphic adventure games. There are sports simulations and simulations of other real-world things like airplanes, ecological systems, and historical battles. And of course there are the arcade games. They can involve chasing things, blasting things, avoiding things that are trying to chase and/or blast you, zooming around things, crashing into things, and otherwise trying to jerk a joystick out of its socket. There are even amazing games that manage to transcend all the categories, either by combining them in new, innovative ways, or by actually inventing something totally new to do with a computer. Those games are very rare, and we could use more of them.

THE FIRST

Not surprisingly, the very first games for the C64 were public domain translations of old PET programs. After all, if you ignored the color, graphics, sound, and extra memory, the C64 was a PET! The first public domain game worthy of the title was John O'Hare's *Monopole*, a two-player Monopoly game. Color and sound effects made it more than just a PET port--it was a C64 game! It's still available in user group libraries, and it has withstood the test of time well. It's a good game, especially for free!

The commercial games followed quickly. Surprisingly, some of the very first of these were not the simple BASIC knock-offs you might have expected. About the first game anyone saw packaged and on the shelves was *Motor Mania* from United Microware Industries (\$29.95 on tape, no longer available). This racing game featured good gameplay and scrolling

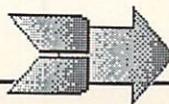


Jumpman: The first INFO Five-Star Game.

graphic screens as well as solid sound effects and sprite racecars. It was a lot more than most of us had expected in the first wave, and it just whetted our appetites for more.

We knew that the C64 had the capability of reproducing some of the great coin-op arcade games. Sierra On-line was the first to prove us right. In the first INFO, Benn said that their version of *Frogger* was so close to the original SEGA arcade title that all that was missing was the aroma of pizza. The C64's capability for faithfully reproducing arcade titles was so great that it proved to be an embarrassment for Atari later when they ported some of their coin-op titles to personal computers. The C64 versions of *Dig-Dug*, *Pacman*, *Donkey Kong*, *Centipede* and others looked so good that they made Atari's own home computers look bad!

There were also arcade "knock-offs"--games that looked and played like the arcade coin-ops but got around paying royalties by making subtle changes. *Gridrunner* from HES was a modification of *Centipede*; Comm*Data's *Pakacuda* was a copy of *Pacman* (but with fish!), etc. They hit the stores early on, and no matter what could be said about the morality



involved, these and some others in the genre were very good.

Then we began to see programs that were arcade quality, but totally new designs. One of the earliest was INFO's first five-star rated game: *Jumpman* from Automated Simulations (which had just been renamed "Epyx"). It featured 31 different game screens and 8 play speeds in a ropes-and-ladders game environment.

Entries in the other game categories appeared early, too. Infocom ported its entire text adventure game line to the 64. Infocom had a jump on everyone because they developed their adventures in a special language that can be ported easily from computer to computer. Once they had a version of the language for the C64, all of their titles could be implemented on it. Right off the bat C64 owners could get *Zork I, II, and III*, and *Deadline, Starcross*, and *Suspended* were not far behind.

In the graphic adventure category, Epyx ported over *Temple of Apshai*. It had been extremely successful on the Apple and Atari computers, but the C64's sprites, sound, and graphics put the other versions to shame.

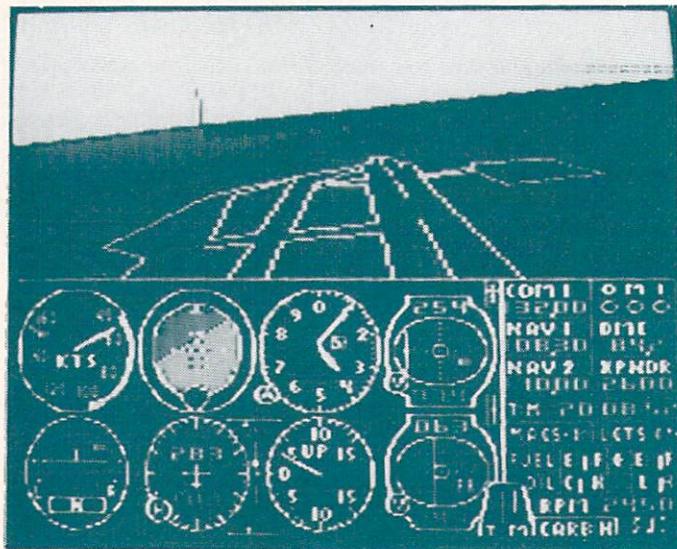
Odesta's *Grand Master Chess* was one of the first implementations of a traditional game on the C64, and it played a respectable game, with moves taking from 30 seconds to 2 hours, depending on how "smart" you let it play.

SECOND GENERATION

It didn't take long for the second wave of software to hit. This time around, it took a lot more for a game to be noticed. The C64 had been out for almost a year, and there were plenty of space shoot-em-ups, Pacman clones, and racing games on the market. People already wanted something different.

When Bill Budge's *Pinball Construction Set* was released by Electronic Arts, it redefined what people thought of as "games". It was a game that let you build more games, a tool for constructing on-screen pinball machines that obeyed the laws of physics just like a real pinball machine does. And people found out that building pinball machines was as much fun as playing them. It got an enthusiastic 5-star rating from INFO and sent everyone else back to the drawing boards. Even now, whenever anyone talks for very long about games on the 64, *Pinball Construction Set* is mentioned among the all-time greats. In many ways, it has never been equalled.

Educational titles were confined to simple drill-



Flight Simulator II from subLogic.

and-fill until the second wave of software hit. The *Factory* from Sunburst Education took an approach that was entertaining as well as educational. Kids had to set up a sequence of factory equipment to fabricate a part that looked like a template. It didn't seem much like "learning" at all.

Everyone knew that subLogic would be translating *Flight Simulator II* for the C64. It looked pretty good on the Apple, but C64 owners wondered if they could do as good a job on a Commodore computer. When it finally hit the market, it was not just as good, it was better. The graphics were smooth and the controls responsive; it was a triumph of simulation, and still remains one of the best pieces of software ever written for the C64.

Arcade titles just kept getting better, too. Progressive Peripherals' *Wizard* took the ropes & ladders game genre to new...er...heights. It featured 50 screens of its own, and a construction set mode that allowed you to create your own screens, complete with their own traps and treasures. As with *Pinball Construction Set*, many people discovered that playing the game was only half the fun.

Impossible Mission's contribution to the innovative second wave was the first use of software synthesized speech. No one who's played *Impossible Mission* can forget the menacing voice challenging you to "Stay Awhile...Stay Forever!" The puzzles that broke up the multiple-screen adventure were an innovation, too, one of the first examples of the game-within-a-game concept.

There had been some minor games that let two players play each other, but the major game companies didn't seem to discover 2-player games until the second wave. The first 2-player game with a "name" was **Pitstop II** from Epyx. This innovative title not only let two people race each other, it featured a horizontal split-screen display that showed the view from the cockpit of both cars at the same time. INFO gave it a resounding five star rating, and Benn declared it one of the top ten C64 games of all time. Electronic Arts followed closely with **Realm of Impossibility**, a 2-player game with horizontally-scrolling 3D screens.

THE MODERN AGE

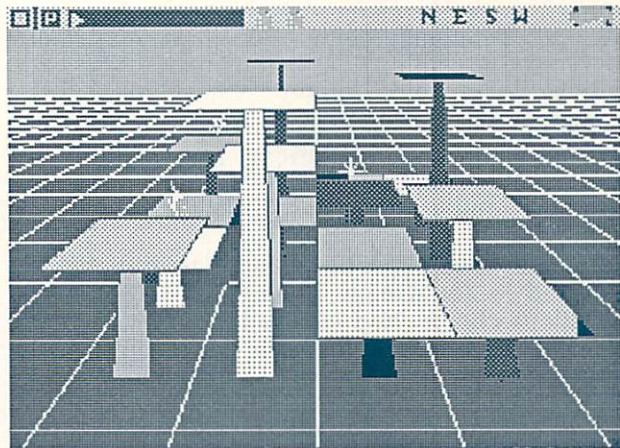
Most of the game companies seem to have settled into a groove, offering only slightly improved versions of older games. They add a few more screens of action to an arcade game, double the size of an adventure, or add a slight twist to an old scenario. The innovators are few and far between.

Occasionally, though, you'll see a surprise. Commodore's **Sky Travel** was a surprise. We weren't used to seeing great software come out of Commodore--**International Soccer** is the only other title that comes to mind. And **Sky Travel** did so *much!* It was like having the whole Milky Way and 10,000 years of time all compressed into your C64. Commodore no longer sells it, but we have just heard that the original authors are making arrangements to make it available again, to which we can only say: hurrah!

Another innovator was Activision's **Borrowed Time**, which made a quantum leap in the way adventure games look and feel. It replaces full-screen static graphic illustrations with smaller illustrations in a window, sometimes including a bit of animation. And they added a joystick-and-icon interface to supplement the type-in keyboard command line. The result is an adventure that runs faster, looks better, and plays smoother than anything that came before.

Firebird's **Elite** integrates a space-trading game with an arcade space shoot-em-up, and they did it with panache. The wire-frame graphics, smooth animation, and game complexity of **Elite** had never been seen on an 8-bit computer before.

Activision struck again with **Portal**. It is an interactive novel, but with a completely different approach than anything that had come before. It places you in front of a graphic terminal with no knowledge other than that the entire human race is gone. Through logic and careful investigation, you piece together what



Commodore's own *Mindwalker* for the Amiga.

has happened. It doesn't resemble anything that preceded it.

As recently as issue #15 we reported on **The Sentry** from Firebird, which combines the best of graphic adventures and classic boardgames into what is really a new genre. The challenge is something like chess, and the 3D landscapes are surrealistic and convincing.

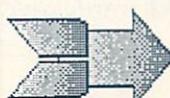
With hundreds of games now available for the Commodore 64, it's easy to understand why many of them look so much alike. Still, it's the innovative games, the ones that use old ideas in new ways, or combine genres to come up with something new, that keep us eager to see what comes next.

THE AMIGA

Before the Amiga was even available we already knew about dozens of games that would ship soon after. Developers like Electronic Arts and Activision, as well as a whole bunch of smaller companies, had latched onto Amiga development systems and were rushing to be the first to market with a game that would blow the socks off the buying public.

Such a surge of programs appeared all at once that it's hard to tell which one was absolutely the first Amiga game, but the first one to impress us was **ArcticFox** from Electronic Arts. The digital sound effects and filled 3D objects are impressive, and the title music is great! It was a good point to start from.

Surprisingly enough, it was Commodore themselves who shipped one of the very first really good games for the Amiga. **Mindwalker** not only showcases the Amiga's excellent color and sound, it is actually a very innovative game. **Mindwalker** combines a graphic adventure, arcade play, and a player character with four different personalities to produce something truly unique. And the sound effects and music are awesome.



Games continued

Leader Board from Access was the Amiga's first great sports simulation. The scenery is good, the gameplay realistic, and the user interface intuitive. It feels like you're playing golf.

Of course, we expected some classic games to be ported to the Amiga. **Flight Simulator II** was an obvious choice, and everyone eagerly awaited the Amiga version. Rumors kept circulating about added features, and beta copies were closely guarded. When it finally hit, it was everything we expected it to be. With chase plane and tower views, pull-down menu control, and even an option to link two computers and fly together, **FSII** for the Amiga is a real classic.

Some of the best games turned out to be those without much flash, but a lot of addictive appeal. I got hooked on **Diablo** from Classic Image, an aptly-named computer adaptation of the ball-and-track puzzles of many years ago. Activision's **Shanghai** (a translation from the Mac) was the real sleeper in this category, however, and within weeks of its release thousands of Amiga owners found themselves playing "just one more game".

Marble Madness was the first great Amiga arcade translation, and EA's version is just as good as the original. It was also among the first to offer interactive two-player play.

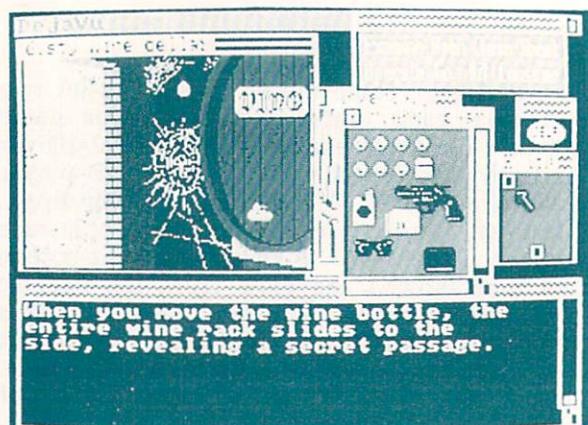
A lot of rumor and speculation surrounded the release of Master Designer's **Cinemaware** titles. The **Cinemaware** series was being touted as "interactive movies", and no one was really sure what that meant. Well, when the first title in the series, **Defender of the Crown**, was delivered, we found out! Though there was some comment about **DOC** lacking "depth of play", no one argued the fact that Amiga graphics and music had never been this good.

Activision took the innovative interface of **Borrowed Time** for the C64 one step further on the Amiga with the introduction of **Deja Vu**. This one lets you drag objects from place to place, open them and examine them, etc., all within the Amiga's multi-window environment.

MicroIllusions delivered **Faery Tale Adventure** to hungry gamers and it received lots of praise for its great graphics and incredible depth and detail. Though **Temple of Apshai** and others had been ported to the Amiga and were very well done, **Faery Tale** set new standards.

But lots of the most entertaining software titles for the Amiga weren't even games. Most Amiga owners would agree with Benn that **Deluxe Paint II** is the best Amiga "game".

The public domain has not lain fallow, either, delivering a raft of interesting programs. The most impressive of the lot have been **Mandelbrot**



A new kind of adventure: *Deja Vu*.

pattern generation programs. **MandFXP** is probably the best to date, with pull-down menus, lots of options, and very fast screen generation.

THE FUTURE

There are more games being written all the time. While there's no way to know what's coming for sure, I suppose we could start our wish list with the obvious: It would be great to see Amiga versions of some of the classics like **Pinball Construction Set**, which was 'promised' at the time of the Amiga's introduction. EA even put a sample screen on the Polyscope demo disk.

We'd also like to see some of the classic arcade games like **Pacman** and **Defender** and the like. Maybe the recent "Games Revival" will convince the Powers That Be that the production of such translations would be a profitable undertaking.

Beyond the classics, we're sure there will be titles that use more of the Amiga's native abilities. We'll see better speech, better animation, more variety, and possibly even some artificial intelligence. There will be simulations with uncanny realism. We hope we'll see construction set software for everything from physics to engineering to genetics to architecture. And somebody somewhere will always be turning out something totally new and different, and socks will fly everywhere.

We know that the "third wave" of Amiga software is almost upon us. There are many features of the Amiga that haven't even begun to be exploited, and when the game developers start to push the Amiga's capabilities, I think even Commodore will be amazed at what comes out of their machine.



Public Domain

Every issue, this new INFO feature will bring you information about the latest and greatest public domain software, free-access software, and shareware available for the C64, C128, and Amiga. INFO reporters will be covering C64 and C128 titles on QuantumLink, and C64, C128, and Amiga software on PeopleLink, and will report on titles from other sources as well.

DEFINITIONS--

PUBLIC DOMAIN: Not copyrighted; available to all; free for the copying

FREE-ACCESS: Copyrighted but released for free public use; not to be resold for a profit.

SHAREWARE: Copyrighted but available for copying, with a donation requested from those who use the program.

PUBLIC DOMAIN GEMS

by Saul Cohen

As a former QuantumLink librarian and columnist for my local user group, I have had the opportunity to preview hundreds of downloaded software programs. Each month, in the new Public Domain column, I will present evaluations of the best programs from the QuantumLink Information Network. Along with the program evaluation, I will be including downloading times, library location and special program operating instructions.

GETTING STARTED

If you are lucky, you will be able to find many of the programs we discuss here in the library of your local Commodore users group. If you don't have a local group, you may be able to find them through some of the public domain software services advertised in the back of this and other magazines. (If you choose that route, make sure the company you are dealing with is reputable.) But one of the most convenient ways of obtaining good public domain software is to download it via modem, either from a local BBS or from a national network.

In order to connect to a Bulletin Board Service (BBS) or network, you need a modem and telecommunications software. Modem prices vary with the speed at which they transfer information, or baud rate. At the present time there are three popular working speeds: 300, 1200 and 2400. Most information networks can handle both 300 and 1200 baud rates, though some of the information networks charge more

for the higher baud rates. While the 1200 baud modems cost more and may have a higher connection cost, they allow information transfer at four times the speed of the 300 rate, thereby reducing phone connection time and lowering phone bills (and aggravation!).

Many modems come bundled with telecommunications programs (often called terminal programs). There are also a number of public domain terminal programs. QuantumLink comes with its own special software which differs from other terminal programs. Your particular choice of software may depend on which network you choose to join or which program works best with your modem. If you need a public domain telecommunications program, you can get one from your local computer club.

THE BBS AND THE NETWORK

BBSs are smaller than information networks. They are usually operated on a volunteer basis by one or two people called sysops, or system operators. Most BBSs can accommodate only one person online at a time. Many of them have a specific purpose or character. For example there are BBSs for computer clubs, games players, garden clubs, and businesses. Generally on a BBS you can transfer files, send and read mail (E-Mail), post messages and talk to the sysop.

An information network like QuantumLink is much larger. To access a network, you first connect to a telecommunications carrier (like Telenet or Tymnet) by dialing a local number. The carrier connects you through to the net, whose computer is likely located many hundreds of miles away. Some of the services on a network are similar to those offered by a BBS. You can send mail, transfer programs and chat, but all on a larger scale. Since networks allow multiple users, there may be 200 other people online at the same time. On a network, you can also hold club meetings, have discussions, take lessons and even play interactive games with other people. You can download new programs or book a plane flight, hotel, or car, or even send roses. You can get the weather, news, and stock quotes. It's like being in a computerized hotel without leaving your home.

DOWNLOADING

The process of transferring a program from a network or BBS into your computer is called



Public domain continued

downloading. Uploading is the reverse: you send a program to the network. The time it takes for the program to be completely transferred depends on a number of variables including the program length and the transfer method.

Some programs in QuantumLink's library have been compressed using either the LIBRARY, ARC or LYNX utility programs. Compressed programs are shorter and take less time to up and download. In compressed form, the program will not run. The program must be returned to its original form using the version of utility program that compressed it (called dissolving). In future columns, we'll be discussing each of these three utility programs, as well as passing along information on how to download from the major networks and from your local BBS systems.

QUANTUMLINK by Saul Cohen

RELFILE COPIER

★★★+

FROM: Hutch
Location: CSS/Software Library/ Browse/
Applications /Utilities/Disk File Copiers
9/18/85-12/11/85
16 Blocks
D/L Time 1200- 1:02 300 3:37

Many databases and some wordprocessors save their file information in the form of a relative file. Most copy programs are unable to copy the relative file format unless they copy the entire diskette. This program succeeds where the others fail. Unfortunately the program will not copy GEOS files.

BASIC 4.0

★★★+

FROM: Dave S2
Location: CSS/ Software Library/ Browse/
Programmers workshop/Basic/ Extensions
09/04/85 - 07/26/87
13 Blocks
DL Time 1200- :50 300- 2:56
Other useful programs: BASIC 4.0 DOC

If you owned a PET computer before you got the Commodore 64, you were probably spoiled by BASIC 4.0. Yes, the Commodore 64 version has an earlier version of BASIC! Add commands to C64 BASIC such as DLOAD, APPEND, BACKUP, SCRATCH and more. Be aware that

BASIC 4.0 can conflict with other programs. Use this program to upgrade your 64 to BASIC 4.0 by typing the following lines:

```
LOAD"BASIC 4.0",8,1
NEW
SYS 36864
```

XEROPUS

★★★+

FROM: JenniferM1
Location: CSS/ Software Library/ Browse/
Gameroom/Arcade/Shoot'em up
08/30/85 - 08/27/86
42 Blocks
D/L times 1200- 2:43 300: 9:30

```
LOAD"XEROPUS",8,1
Use Joystick Port #1
```

Space invaders with a twist. A great machine language action game with fast graphics and sound. Aliens come out of the sky and spin toward you as you try to shoot them down.

PEOPLELINK C64 by Robert Umfer

OMICRON

★★★+

Section 8 - File #6476

If you like action games, then you will definitely enjoy OMICRON by Jim Roof. Plug your joystick into port 2 and be prepared to protect yourself from invading aliens. Jim offers the user a choice of five speeds, each making the game progressively more difficult. His graphics are excellent, comparable to many commercial programs on the market today. The game is always challenging and surprising, even for those with good hand/eye coordination. No pattern is repeated, so it's always a new game every time you play it. Warning: this game is addictive, so expect to sit there for hours at a time. The file is 37 disk blocks long.

CSLIDE

★★★+

Section 7 - File #5350

D.A. Hoff has written a program that adds an interesting touch to viewing both normal and



CSlide fades screens in and out...

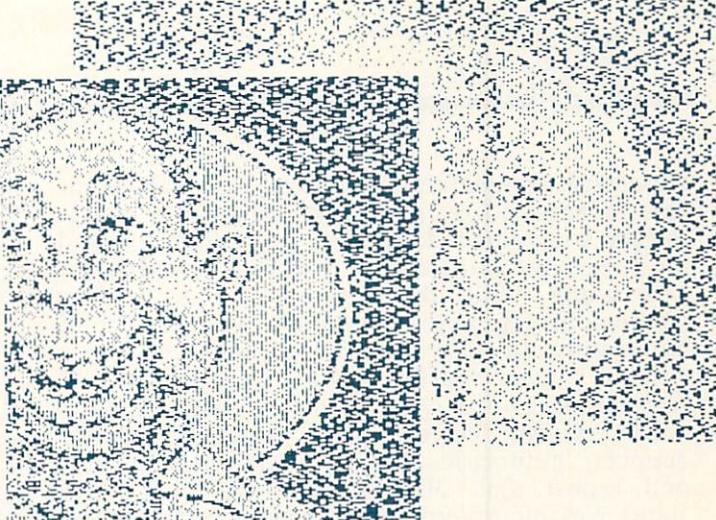
compressed Doodle and Koala files (the ones whose titles are prefixed with DD, JJ, or GG). After you run the program, place your picture disk in the drive and sit back to watch the show. As the drive finds a picture, it prints its title to the screen. It then dissolves to display the picture for about 15 seconds. Then the graphic dissolves, and the next picture follows this same routine. The effect is a very smooth slide presentation. When the last picture has dissolved, it repeats from the beginning. Section 7 has over 300 pictures to view (including some for adults only). CSLIDE is 10 disk blocks long.

WXMODEM64

★★★

Section 5 - File #5743

The hottest file for the 64 on PLink is WXMODEM64, a quasi terminal program written by Kermit Woodall (with extra features by Tom Brown) to take advantage of the speed of Windowed Xmodem during downloading. The 64 cannot take *full* advantage of WXmodem, but Kermit's program has increased downloading speeds by as much as 82%. (The WXmodem module is also available for anyone who wishes to integrate it into his own terminal program.) At present, the program must be used with a 1670 or Hayes-type modem. If you do a lot of downloading, then grab this program the next time you're on, and cut your online costs considerably. The file is 38 disk blocks long, and uses the self-dissolving arc format.



PEOPLELINK C128

by Robert Umfer

DISKDOCTOR128 V2

★★★

Section 12 - File #5230

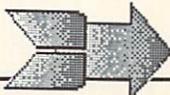
Kevin Hisel's DISKDOCTOR128 (Version 2.0) is one of the finest public domain programs ever written, as well as one of the most useful. Running in 40 columns only, Kevin's program can help you turn just about any sick disk into a perfectly-working specimen. Commands are performed at the touch of one key. Some options allow you to follow a file through to the end without having to check which track and sector to read next, a jump command allowing the user to find the beginning of any file quickly, a hunt command helping you find all occurrences of a designated code or text on the disk, and an excellent printer option, giving the user a hard copy of any track and sector on the disk. The printout is in decimal, hexadecimal, and ASCII, and lines up perfectly on my Gemini. Every 128 owner should have this program on his utility disk. It is 99 disk blocks long, and runs in compiled BASIC, making for a fast program. An extra bonus is that it reads the new 3.5 disks on the 1581.

ULTRATERM V2.00

★★★

Section 12 - File #6489

Steve Boerner has written one of the finest public domain terminal programs that you'll ever see. There is very little missing from ULTRATERM that can be found even on very



expensive commercial programs. All commands can be accessed by using the drop-down menus (either with cursor keys or joystick/mouse), and most can be initiated by pressing a particular key along with the Commodore Key. The Commodore/H keys will show you a list of commands, in case you forget. Included are a 64,000 byte buffer with ASCII/PETSCII translation, two drive access (including the new 1581), CBM, Hayes, and Westridge modem support, automatic dial and answer, multidial and repeat dial, 300 or 1200 baud, a phone index capable of holding 63 names and numbers (each with 8 programmable function keys), character and line delays, Punter and Xmodem protocols, etc., etc., etc. Everything is well-explained in the 28-page documentation file which is included. The best part of ULTRATERM for PLINK users is the inclusion of WXmodem, a protocol which makes downloading approximately 82% faster than Checksum or CRC Xmodem. Steve calls his program SHAREWARE. (We disagree about the meaning of this word, however.) ULTRATERM is a 196 disk block program in a self-dissolving arc format. Dissolve it to a newly-formatted blank disk for best usage. Run this in 80-column mode only.

COMPRESSION128 V3.0

Section 12 - File #6374

I've completely rewritten COMPRESSION, a printer utility based on the 64 program SQUEEZEPRINT. The program is now completely menu driven, making only the cursor keys and the return key necessary to operate the drop-down menus. The program works perfectly with Epson-type printers, and as soon as some documentation problems are cleared up, will work with the MPS1000 in IBM mode, and Okidata printers. The program offers to print out sequential files in either superscript or condensed mode, in either 2 or 3-column format. Linefeeds are altered to fit up to 128 lines of print per page. Version 3 now allows you to start printing from any of the first 20 pages of the document, as well as reading the file from any drive numbered 8 to 15 and printing to either device 4 or 5. COMPRESSION128 is written in compiled BASIC, and stored as a self-dissolving arc file to avoid Xmodem padding during the download. It is 79 blocks long and works in 80-column mode only. This program is a must for anyone who needs to keep hard copies of a lot of documents.

REMEMBER: You don't have to be on QuantumLink or PeopleLink to get these programs--many are available from local users groups.

You can get information about signing up for these network services by calling:

QUANTUMLINK: 703-883-0788

AMERICAN PEOPLELINK: 312-870-5200

1750SIDPLAYER

Section 12 - File #6249

Finally someone has written a program that permits 128 users to hear SID songs in 128 mode. Not only has John Pich written a nice program, he has added something extra for owners of a RAM expansion module. John allows the user to fill the 1700 or 1750 with up to 333 SID songs, giving a possible 12 hours of uninterrupted music! There is a bug in the ANALyze command that needs fixing, but it has no effect on the music at all. Bill Hitchcock and I have added some features to the program so that it works with the 1581, and it now loads songs from the same drive from which it was loaded. In his notes John admits that it needs to be made pretty. Let's hope that he's working on the next version now. This program is 45 disk blocks long and is in a self-dissolving arc format. Run this program in either 40 or 80-column mode.

Check out the next issue for more INFO about great Public Domain software. Saul and Bob will tell you about more C64/C128 programs available from QLink and PLINK, and Jim Burnes will join us with coverage of the best Amiga downloads available from American PeopleLink.



ABOUT THE AUTHORS:

Saul Cohen is an eighth grade science and computer teacher in Montgomery County, Pennsylvania. He also teaches a variety of computer courses to teachers. Saul's computer interests include wordprocessing, teaching applications, and of course telecommunications. You can reach Saul on QuantumLink via EMail to INFO SC.

Robert Umfer, as CBM*BOB, shares the Sysop duties with CBM*LARRY in the Commodore Club section of American PeopleLink. He has a B.A. in French and an M.A. in computer science. His 'day job' is teaching high school French and Spanish.

THE FIRST

It's a measure of the struggle that Commodore encounters in getting any respect from the press that the August 3rd issue of *Computer and Software News* ran an article with this title on page three: *Apple Readies 1st Multi-tasking OS*. They go on to say: "Apple, beating IBM to the punch, will become the first manufacturer in the market with a multi-tasking operating system, a feat nearly all observers agree will accelerate Apple's penetration of the business market." The article refers to an add-on multitasking operating system Apple has developed for the Mac II. Now, as I recall, Commodore has been shipping a computer with a built-in multitasking operating system for about a year and a half now...

ACTIVISION / MICROILLUSIONS

In the latest round of the Acquisition Wars, Activision has signed MicroIllusions to its Affiliated Publisher program. Under the terms of the program, MicroIllusions remains an autonomous company, but Activision takes over distribution of the MicroIllusion titles, which include *Faery Tale Adventure*, *Discovery*, and many others.

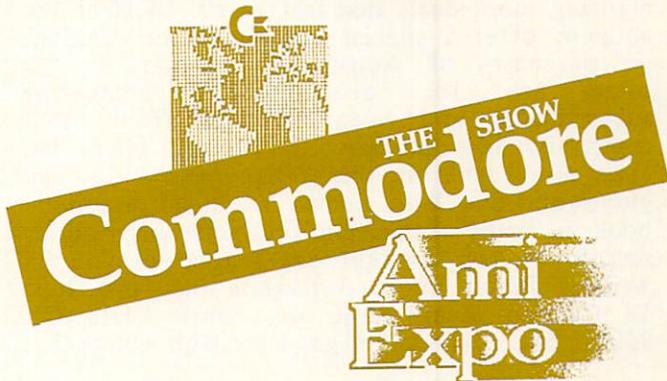
MINDSCAPE GRABS COIN-OPS

Mindscape has signed an exclusive deal with Atari to port some of Atari's most popular coin-op games to personal computers. The first two titles are *Paperboy* and *Gauntlet*. Each carries a pricetag of \$34.95. Future releases will include *Rolling Thunder*, *720*, *Road Runner*, *Road Blasters*, and *Gauntlet II*.

AMIGA PROMOS

Well, the Great INFO Amiga 500 Giveaway is over, but if you didn't win our Amiga, don't despair--there are other Amiga giveaways to come! If you happen to be in West Germany, we understand that McDonalds there is giving away 200 Amiga 500s with monitors as part of one of their bigger promotions this year. Stateside, Kellogg's will be offering A500s in one of their cereal-box sweepstakes next Fall. Or, you can set your sights a little lower and shoot for one of the Commodore 64 systems that Mars Candy Co. will be giving away in a Milky Way candy promotion. And you might even want to watch the pages of INFO...

THE WORLD OF COMMODORE



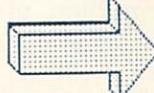
COMPUTER SHOWS

The World of Commodore Show is always a big event, from what I hear. I hope to get my first opportunity to find out for myself this year. The 1987 show takes place December 3-6. As usual, it is being held in Toronto's (that's in Canada) International Centre. (My spelling checker always wants to correct that...) Anyway, it will feature famous speakers, like Jim Butterfield, and displays by a bunch of Commodore software and hardware vendors. For more INFO, call The Hunter Group at 415-595-5906.

Fall COMDEX convenes in Las Vegas from Nov 2-6. Benn will be there, checking out the latest and greatest for the Amiga. No word from anyone yet on whether or not Commodore will be there. Phone 617-449-6600 for information.

The Winter Consumer Electronics Show fills the same hall in Vegas January 7-10. Last year's was pretty dead (most of the vendors held off on new introductions until the summer show), but we'll see what happens this time. Call 202-457-8700.

The first Ami Expo show (in New York City, Oct. 10-12) will be just over as this issue hits the stands. This show is brand new, so we'll have to wait until then to get the public's vote on how good a job they've done in getting it off the ground. The second Ami Expo show will be held January 16-18 at the Westin Bonaventure Hotel in Los Angeles. For information on that and on future Ami Expo shows (including the one scheduled for Chicago July 22-24 next summer), call 800-32-AMIGA.



ACTIVISION COUPONS

Activision is reprising their popular coupon book promotion of last season with a new book offering more deals than last year's. Most of the coupons offer a special bonus deal or discount on purchases of Activision products, though some are for discounts on magazine subscriptions and even products from other companies like Berkeley Softworks. There are even some deals on things like Wilson baseball gloves and Star Wars books. You'll get a coupon book in many Activision products this holiday season, or you can get one mailed to you by writing: Bonus Book, Activision Inc., c/o 3605 El Camino Real, Suite 40, Santa Clara CA 95051. The coupons are good through March 31.

COMPUTER FINANCES

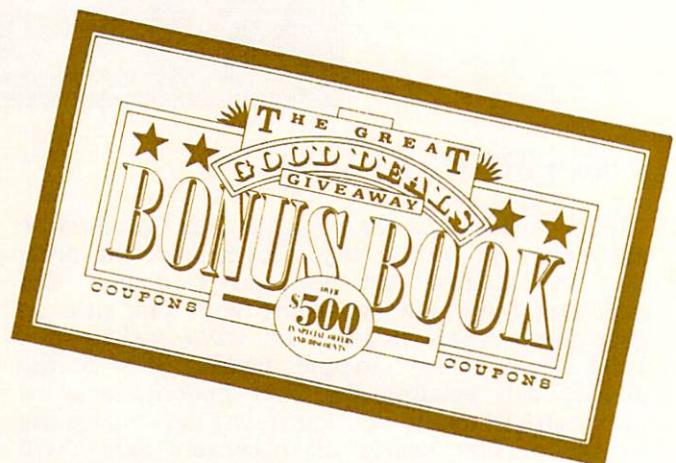
Corporate profit: it doesn't show up when you plug in the computer, but it has a great deal to do with whether or not the computer gets to you in the first place. The Big Four companies in personal computing all turned in pretty good financial reports for the second quarter of 1987.

Atari isn't saying whether the bulk of their money is coming from the upsurge in the home videogame market or from sales of ST computers (streetwise observers are betting on the former), but the second quarter of fiscal 1987 has been a good one for them. They reported \$13.5 million in profits on sales of \$70.7 million for the April/May/June period. At the time they announced the profits, they also announced they had begun shipping the new Mega ST in Europe, though units for the U.S. market aren't available yet.

IBM's profits were down for the second quarter, but with a three-month profit of \$1.3 billion the point is practically moot. Sales were actually up a few percent over last year, to \$12.8 billion. The development costs of the PS/2 and an early retirement program for 13,000 employees were cited as the major causes of the drop. Analysts think IBM sold about 150,000 PS/2 systems in the second quarter.

The same quarter for Apple showed a \$43.5 million profit on \$637.1 million in sales. Apple sales are way up over last year, and analysts are projecting that Apple will break the \$2 billion dollar revenue mark by the end of their fiscal year. Mac sales are good. Real good.

Commodore's fourth fiscal quarter (the April/May/June period) resulted in a \$2.1 million profit on sales of \$190.4 million. That



Activision Bonus Book Coupons.

marked the end of their fiscal year, in which they made \$28.6 million on \$806.7 million in sales. That compares to a loss of \$127.9 million in the previous fiscal year, on sales that were actually about 10% better than those this year. Tightening the belt has made all the difference at Commodore. Now if they can just promote the machines and get more of them sold...

The computer business seems to be doing very well in general. One good indication is that semiconductor chip manufacturers reported chip sales up by 18% for the first half of '87 over last year. That signals an increase in equipment being built in the second half.

BRODERBUND BOARD GAME

Computer software companies seem to all be seeking to diversify their product lines. Perhaps the recent slump-and-recovery cycle in the computer games market has taught them the lesson their moms tried so hard to get them to learn when they were kids: "Don't put all your eggs in one basket!" In any case, Broderbund Software has announced that it is branching out into a low-tech field that's a natural for a computer games company--family board games. The first product of the new Broderbund Games division is called **Personal Preference**. It involves adults and kids in a social communication game testing one's skill at determining another's likes and dislikes. The game, which involves 800 cards and a folding playing board, was designed by Don Carlson, a social psychologist here at the University of Iowa. So if you get a box from Broderbund for Christmas this year, don't turn on the computer until you read the fine print--you may not need one to play!

WORKSTATIONS

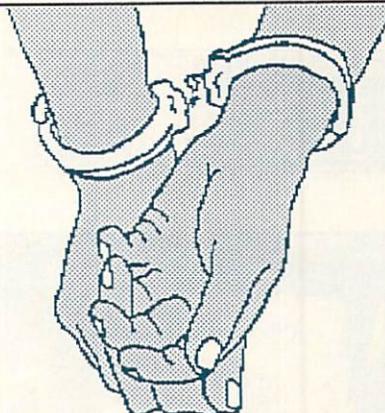
It may not seem like much of a threat, but the manufacturers of high-end graphics workstations have recently made dramatic price cuts that may cause some competition for Commodore's Amiga, especially the A2000. DEC, Sun, and Apollo all recently announced cuts of almost 50% on their workstations prices, which places the formerly-\$10,000 units into the \$5000 price range category. Since a fully-configured A2000 system with hard drive, bridge card, and monitor lists for about \$3500, high-end users may be tempted to opt for a more expensive but more prestigious workstation. However, we expect the major impact to be on Apple, since the Mac II is in the higher price range.

APPLE & IBM DROP MODELS

With the introduction of new computers, Apple and IBM have dropped some of their popular older models. Apple has suspended production of the Macintosh 512KE in favor of the newer Mac SE, Mac Plus, and Macintosh II. IBM has dropped the XT and AT lines, and will concentrate on the PS/2 series. The Apple move is no shocker, but many people in the industry think IBM's move may drive a lot more business into the clone market and away from IBM. The XT and AT are still the foundation stones of the MS/DOS computing world, with an established software base of thousands of titles. With many clones now not only much cheaper but actually more PC-compatible than the new PS/2 series, many users will undoubtedly choose to go with the more proven technology, even if they have to go to someone other than IBM to get it.

BUYING A COMPUTER

A recent C&SN consumer survey indicates that most consumers who are in the market for a personal computer expect to pay less than \$1500 for it. 29% of respondents had a price of \$751-\$1500 in mind, while 17% wanted to spend from \$250 to \$750. 22% expected a \$1501-\$2500 pricetag on their system, while 20% expected to pay even more. That's good news for Commodore, since they offer computers in all the most popular price ranges. Apple and IBM can't compete at the low end, and Atari offers nothing at the high end of the range. Many of Apple and IBM's computers fall in a price range of over \$3500, a price only 7% of consumers indicated they would be willing to pay.



CRACKER BOXED

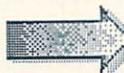
The Sheriff's Department of Portland, Oregon, recently picked up and locked up William Landreth, "The Cracker". The 22-year old author of *Out of the Inner Circle* once hacked his way into several of the most secure computer systems in the world, including those at NASA and the Pentagon. For those crimes, he was already serving a 5-year probation. The Sheriff picked him up for violating the terms of his Southern California parole. They said he was dirty, shabby, and barefoot when he was arrested. He is reportedly on anti-depression medication, and has been ordered by the court to undergo a three-month psychological evaluation. Remember kids: Crime Does Not Pay!

ACTIVISION POSTS PROFIT

Activision recently sent us a bottle of black ink to declare that, for the first time in four years, they had posted a quarterly profit. They made a half million dollars the first quarter of '87 on sales of \$8.7 million, nearly double the sales figure they reported for the same quarter a year ago. It looks like the hard times are behind them. Congratulations, Activision!

ATARI BUYS FEDERATED

Atari has purchased the 67-store Federated Group chain of electronics retail stores. The chain, which is situated in the southwest, has been in financial difficulty. Tramiel and company made the purchase in a move calculated to add company-controlled outlets for the Atari ST line, and to simultaneously strike a blow at Commodore/Amiga. The Federated Group was one of the larger outlets for the Amiga. The trade papers report that most industry analysts consider the move a chancy one, pointing out that investing in a losing company is not generally sound business, and that previous attempts by computer manufacturers at establishing a "company store" chain have been unsuccessful, with IBM itself as the major example.



...continued



CBM USER GROUP OFFER

Commodore recently surprised the user groups on their approved list by asking them to send in a packet of mailing labels for each member of their group, with the promise of a "fabulous secret offer" for those who participated. Many groups complied, and their members received a special coupon good for an excellent deal on two bundled software packages for the Amiga 500. The offer is being carried out through about 675 participating Amiga dealers, and it works like this: When you buy an Amiga 500, you turn in the coupon and pick one of two software collections. Package A contains \$599 worth of software for only \$99. The titles included are Deluxe Paint II, PageSetter, Aegis Animator, Textcraft Plus, Marble Madness, and an Epyx 500XJ joystick. Package B delivers \$1200 worth of software for \$199. It includes WordPerfect, PageSetter Deluxe, Superbase Personal, MaxiPlan 500, Diga!, Deluxe Video, and CLIMate. Purchasers can pick one package or the other. Unfortunately, there seems to be no way for anyone to get in on the deal after the fact—it was mailed directly to participating registered user group members. On the other hand, maybe that's good. It should prove to people once and for all that there *are* some great benefits to be derived from belonging to a user group. In any case, if you got the offer from Commodore, make sure you take advantage of it by October 31.

As part of the same deal, Commodore offered each user group one complete A500 system at a special system price. For \$999.95, each group could pick up a system whose list price is almost twice as much. It includes an A500, A501 internal 512K memory expansion & battery clock, A1080 monitor, A1020 5.25" external disk drive with Transformer PC-emulation software,

and an A1680 300/1200 baud modem. Let's hope that CBM keeps up this kind of user group support. Of course, these deals help out Commodore by stimulating interest in the A500 and building a large instant user base, but that's okay. It's a good deal for Commodore and a good deal for the users, or what the MBAs like to call a "Win/Win Situation".

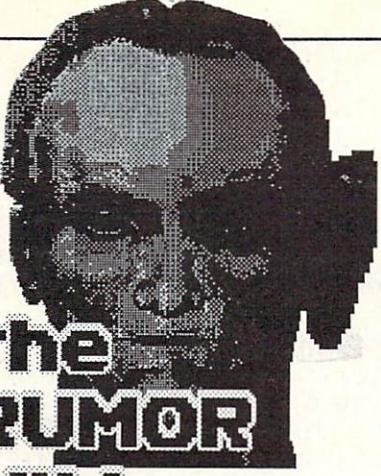
AMIGA IN THE MEDIA

With Commodore not exactly pulling out all the stops to promote the Amiga series, we are very happy to see any reference in the media to these excellent machines. Various readers pointed out to us two recent references that we missed.

The September issue of *Analogs*, the premier science-fiction magazine, featured a story by Jerry Olin called "In the Creation Science Laboratory". In the story, God consults his personal computer. The illustration accompanying the story depicts a rather modern-looking deity with a state-of-the-art computer: an Amiga 1000! Though the machine is not identified as an Amiga, no Amiga fan could mistake the style, and the checkmark logo in the lower corner of the monitor is a dead giveaway. A tip of the INFO hat to the illustrator, Bill Warren, for this nod to our favorite computer.

The Amiga was not only pictured, it was actually mentioned by name in a *Newsweek* article on desktop video that appeared in the August 10 issue. The article focused on how Certain Personal Computers are giving home video users professional features for amateur investments. The Amiga was featured because it is being used by Richard Lewis, the production designer of ABC's *Max Headroom*, to produce video graphics for that show. Watch carefully this season, and see if you can tell the Amiga graphics from the extremely expensive studio-generated graphics. Lewis also mentioned EA's *Deluxe Video* as one of the tools he'll be using.





the RUMOR MILL

DISCLAIMER: The following are among the most entertaining rumors we've heard the past couple of months. They are presented for your entertainment and amusement only. Please do not base any important decisions on these rumors, as many will prove to be inaccurate or just plain false.

-> Is it true that Digital Solutions' LPD Series for the Amiga is named for the three programmers working on the project--Larry, Paul, and David?

-> We hear that the illustrious Dale Luck is involved in a project to port the UNIX XWindows system to the Amiga. Along the same lines, Amazing Computing reports that Sun Microsystems has ported NeWS, a Postscript windowing system, to the Amiga and will demo it at the SIGGRAPH graphics show.

-> Unconfirmed statistics from a source on Wall Street show that Commodore sold 70,000 A500s and 15,000 A2000s in Europe in May/June, the first two months the machines were available there. That's more than all the A1000s sold in Europe over the past year.

-> We hear that an Amiga version of COMAL should be available by the time you read this.

-> It seems that software developers semi-officially declared the Apple IIGS "Dead" at a recent developers' conference. Apparently software sales are as close to zero as they can be.

-> Unofficial in-house estimates at Commodore are projecting first-year sales for the A500 in the range of a half a million units.

-> It looks like all the promised internal A2000 boards (the Bridge, the hard disk controller, and the 2 meg memory board) will be available simultaneously with the release of the A2000. That's good news!

-> We hear that Commodore's medium-persistence monitor will be on the shelves about two months after the release of the A2000.

-> Commodore has apparently allocated no funds for advertising their computers on network TV or in computer magazines for this

holiday season. They'll be buying local TV time in major metro markets, and doing co-op buys of radio and newspaper through local dealers. You'll also see some ads in business and trade magazines.

-> A source close to Commodore tells us that the Amiga ads you'll be seeing in the November and December issues of COMPUTE! and COMPUTE!'s Gazette are freebies given to Commodore as the result of a recent settlement between the two companies. COMPUTE! allegedly violated a non-disclosure agreement they had with Commodore regarding the release date of information on the new Amigas when their story appeared two weeks early.

-> To read an interesting editorial opinion from the original Amiga design team, try this (you'll need a friend to help--it takes three hands): Hold down both Shift keys and both ALT keys, then press and hold one of the function keys to see a "secret message" displayed on the top line of the Workbench screen (as Peggy Herrington reported last issue, each function key displays a different message). While holding down all five keys, pop the disk out of the drive for another message. Then stick it back in again, and watch quickly for the comment. Rated R.

-> A source close to Commodore tells us that the C128 will be built only through the Fall months, and will see its last days on the shelf this Christmas season. The C128D will take its place in the CBM product lineup.

-> Sources with an ear inside Commodore's engineering department report that they have developed working prototypes of the long-anticipated Really Fat Agnes chip. This chip will be a drop-in replacement for the current Fat Agnes chip in the A500 and A2000, and will let those machines address a full megabyte of chip RAM for graphics and sound. Whether or not the new Agnes will allow higher resolutions or more colors is still up for grabs. There is also no word on when the chips will be available.

-> We hear that dealers have greeted IBM's new PS/2 model 25 with a big yawn. This super-stripped-down version of the model 30 reminds them too much of the ill-fated PC junior.

-> Peggy Herrington warns us that yet another "guerilla" program has shown up on the nets. This one, for the Amiga, is usually called ST.EMMY.arc and purports to be an ST emulator. When run, it formats the disk it is on, *including hard disks*. Remember to always use extreme caution when running any downloaded program. Unfortunately, there are some people out there who think this kind of vandalism is funny.



PART TWO geos UPDATE

by Don Romero

Where GEOS is concerned, there's always just too much to report on! This time we'll look at GEOS with the 1764 RAM Expander and take a spin with some GEOSware from Myth Conceptions. Let's get to it, shall we?

1764 ADDS ZIP!

To this writer's mind, Commodore's 1764 RAM Expansion Unit (or REU) is the most eagerly awaited (and longest overdue!) peripheral of all for the Commodore 64. Unlike a printer or a modem, which expands what you can do with your 64, the 1764 expands what the 64 itself can do. It blows away the old 64K RAM limitation by adding 256K of extra memory.

By being able to exchange up to 8K blocks of data at a time through the 1764's direct memory access (or DMA) circuitry at nearly instantaneous speed, the effective amount of RAM available for program and data variables is expanded by a factor of five.

Since the 1764 isn't 'transparent' (its use requires extra software support), it is incompatible with many programs at the present time, especially commercial ones. And, while the REU supports PRG, SEQ, REL and USR files via RAMDOS, full 1541 DOS emulation is not possible due to differences in the very natures of the two devices. But the 1764 nevertheless oozes with potential. I hope to see all the major application software developers modify their software packages to use this new source of 64 computing power.

Berkeley Softworks (BSW) has seen the future for some time: they have been using REUs in the actual development of the GEOS operating system and GEOS application programs, and even use them in the day to day operation of BSW itself. In various interviews, press releases and online conferences on QLink, BSW has frequently said that the addition of RAM expansion turned the Commodore 64 into virtually a new machine. Now that the 1764 is starting to show up on dealer shelves, it's possible to peel the truth (if any) from the hype.

THE 1764 PACKAGE

The 1764 comes with a big 128-styled powerpack, which is needed to feed all those

extra RAM chips the juice they need. Nasty, costly things would happen to your 64 and your REU without it. Also included in the package is a (too) short manual and a disk of REU utilities, wedges and demos. Side One runs from BASIC; and Side Two has four upgrade programs for modifying GEOS to work with the 1764.

The animated BASIC demos are very impressive and you may have to pinch yourself to remind yourself that you still have a Commodore 64. (It might help to recall how long it took to load those 32-36 graphic frames from the 1541 into the expansion RAM.) There is also a RAMDOS program which supports the extra memory as a RAMdisk and a new version of the DOS WEDGE which (unlike DOS 5.1) supports RAMDOS. Right off the bat, you can have fun loading huge PD programs like MONOPOLE or SUPERTREK from the RAM disk in just a couple of seconds instead of a couple of minutes!

UPGRADING GEOS

Installing the GEOS upgrade consists of running several UPGRADE programs which modify the GEOS KERNEL, TEXT GRABBER, geoMERGE and geoDEX programs to run with the 1764. There I ran into the first problem I'd had while testing the 1764: the GEOS Upgrade program runs a self-test before it will modify the boot disk. I got stuck with a stupid disk. It flunked!

Calling Berkeley Softworks for advice was a lost cause: their phone line is BUSY! I wasn't up on QLink yet, and the Home Office was at a loss as well. Then I got an idea...

Just what fails in the test isn't indicated. But I figured that UPGRADE didn't like the way my drive was aligned, or else the error was a 'mere' error in a sector header, and the data underneath was probably still good. So I copied the disk (which is unprotected) with the shareware disk copier program 4MINUT (no errors reported) and tried using the copy to upgrade my boot disk.

It worked like a charm! After booting the converted disk, two new programs - CONFIGURE and RBOOT - now showed in the boot disk directory.

CONFIGURE-ASHUN

Through the CONFIGURE tool, GEOS can be set to use a RAM Expansion Module in several

ways. First of all, it can use it as an independent RAM disk - effectively a second drive. Alternately, a 1764 can be used to 'shadow' one disk drive (it does not have enough RAM to shadow two disk drives). In the shadow mode, a copy of everything loaded from or saved to disk is also copied to the REU and whenever possible, the REU copy is used to cut load speeds to virtually zero.

A second adjustment GEOS allows through CONFIGURE is the use of the REU's direct memory access (or DMA) channel. It's very fast, and replaces the 64's CPU during calls to the MoveData routine in the GEOS KERNAL. The most notable result I found using this technique was much improved screen scrolling inside geoPaint. The scroll improvement is almost negligible in geoWrite, however, since in GeoWrite the CPU still has to analyze the (essentially ASCII) text file to figure out what to put on the screen graphically.

ABOUT THE ZIP

The first indication of added zip (aside from the BASIC demos) comes when crashing out of and GEOS and REBOOTing back into it. Normally, when you leave GEOS for BASIC, a special reboot routine is saved in 64 memory which can be activated by hitting the RESTORE key. If you do something to destroy that routine, like overwrite it or shut the 64 off then on again, you'll have to reboot GEOS from disk to get back. If you have the RAM expander, though, and DeskTop is still in its memory, you can load REBOOT from disk and be back within GEOS in mere seconds. I managed to quit GEOS to BASIC, flick my 64 off and back on again, load RBOOT from disk and arrive back through DeskTop into geoWRITE with a five page document (also in RAM Disk) loaded and ready to edit in less than 18 seconds!

That's THE ZIP!!

And there is more...I prepared a table of some times I took with my trusty waterproof (to 30 meters) Innovative Time wristwatch in chronometer mode.* Most events tested showed marked improvement with the 1764 RAM

*Computer geeks are well-known for the complex and bizarre digital watches they wear. I would not be surprised to find that Don's watch also features a built-in calculator and 2K telephone directory, just like the one our data manager, Tom Malcom, wears.** -Mark

**I do not wear a digital watch. Real hackers don't care what time it is. -Mark

expander. The one disappointment was the up and down screen scrolling in geoWrite noted above.

OTHER REUS, OTHER DRIVES

In spite of Commodore's official advisement against doing so, some 64 users have already been successful using the 128K model 1700 and the 512K model 1750 RAM Expansion units with their Commodore 64s - and with GEOS/64. The essential element to safe operation of any of the new REUs with the C-64 or C-64c is a more powerful powerpack -- a 3 amp rating or more is recommended. Commodore sells (and Jameco also markets) a replacement powerpack for the 128 that can be converted for use with the 64 by changing the connector to the computer. It's not difficult, but not exactly light work for a novice, either. And presumably, there are warranties to be nulled and voided herein, also.

1750 Notes: Under GEOS, the 1750 is very desirable because of its full 512K of RAM. It allows the shadowing of two 1541/compatible disk drives.

1700 Notes: Because it has just 128K of extra RAM, GEOS does not fully support the 1700, particularly in the 'shadow' mode. Therefore some of the test results may not be applicable.

1581 Notes: The new Commodore 1581 disk drive has begun to show up on dealers shelves. Unfortunately, GEOS/64 will not apparently fully support the 1581 disk drive. But the soon to be released 128 version of GEOS will support the 1581. Moreover, according to GEOS ROB on QLink, there are no immediate plans by BSW to offer a GEOS-64 upgrade to rectify the situation. It's unfortunate, though there obviously aren't a lot of GEOS users with 1581 disk drives out there throwing rocks at BSW's windows...yet.

1764 Expansion Expansion: Remember when 64K was a LOT of memory? And now an extra 128K is not enough! Is an extra 256K to be considered paltry, too? Guess so, because there are already plans and software floating around in the public domain for adding an extra 256K to the 1764 REU. More Is Better.

1764 CONCLUSIONS

But at a list price of \$149.95, is the 1764 worth it? Wouldn't it be better to get a 128 instead? (Or an Amiga 500, for that matter?) Ultimately, that depends on the user. For someone who is simply tired of bumping up against the 64's various limitations, the 1764



probably won't be 'enough'. It won't turn the 64 into a totally new machine. Along the same lines, since most commercial packages don't (yet) support REUs, buying the 1764 is a little like buying a new system anyway, with a small (but growing) software base.

Nevertheless, a lot of 64 users - especially the diehards - are going to buy the 1764 or another REU and find themselves in speed heaven. Public domain utilities and adaptations will spring up everywhere. Traditionally, Commodore 64 productivity classics like Paperclip and Superbase 64 have held their own against the competition in terms of price and performance. If they are forthcoming (admittedly, a big "if"), full-feature REU versions could very well blow the competition away.

In any case, the 1764 definitely puts The Zip into GEOS on the Commodore 64. Using the near-instantaneous load/save speed and the DMA leaves only the 40 column screen, the 1 MHz 6510 CPU (and the optimization of the program coding) to hold GEOS applications back. Envy, then, the 128?

Now if Berkeley Softworks and Xetec could just get together for custom GEOS KERNAL for the Lt. Kernal hard drive: hint, hint....

GEOFONT & PATTERN EDITOR

If letters are Vanna White's life, fonts are my very being. I bought my Gemini 10x largely because of its downloadable character sets. Fonts. I use the Xetec printer interface (which is occasionally incompatible with my Flash!) because of the user definable character sets. More fonts. And I like using GeoWrite because of the various and sundried character sets. The Font's the thing!

So what IS a font? A font is the look or design of a character set. Sometimes character spacing or pitch (e.g., pica, elite, etc) are confused with fonts, especially in printer advertisements. Italics, shadow, bold and doublestriking are also sometimes referred to as fonts, but along with underlining they are more accurately considered to be 'aspects' - standard modifications of a font style. Most printers have just one or two fonts and several different aspects and pitches.

GeoFont is just what the name implies, a GEOS application you can use to create fonts that can be used in other GEOS applications (in those that allow font usage, of course--some, like GeoFile, don't.) Included on the GeoFont disk are several other GEOS applications and tools. The PATTERN EDITOR can be used to

modify the 32 different fill patterns that GEOS supports. GeoDUMP is a desktop accessory which will dump most screens to the printer from within an application.

CHANGE PRINTER and CHANGE INPUT are two desk accessories that work like the deskTop options SELECT INPUT and SELECT PRINTER, except that they can be accessed from within an application. The last program included is AUTO PREFERENCE, a routine which modifies the boot disk so that Preferences is automatically brought up first thing once deskTop finishes loading. Since I didn't want to alter my only boot disk, I didn't try running AUTO PREFERENCE. Similarly, I've only one printer and one input device (my only joystick is being borrowed - yes, I'm cheap) so I was unable to make a full test of these accessories also.

FONTASTIC!

I tried out GeoFont by reproducing as best I could the very first font I created for my Gemini 10x - called "Serif". Serifs are the little 'feet' (or 'hands') that characters sometimes have (typewriter letters, for example.) Standard BSW 9 point, on the other hand, is referred to as being 'sans serif'.

Like any good GEOS application, moving through the various functions of GeoFont is as easy as pointing and clicking. To start, you must select a point size, or how many pixels/dots high your font will be from the tip of your ascenders (e.g., the top of capital letters, l, H, d, etc.) to the bottom of your descenders (e.g., the dangly parts of the letters g, j, p, q and y.) Next, you must grab the baseline indicator (where all the non-descender characters sit) into place. For example, the indicator would usually be placed at row seven for a 9 point character set, allowing two dot rows for the descenders.

Moving through the character set you are designing is as easy as clicking '+' and '-' boxes, or selecting a desired character from the keyboard. Similarly, setting the width of each character can be set via another pair of +/- boxes, or by clicking the WIDTH box and responding to a dialog box with the desired value. It was with the Width settings that I had my only beefs.

A new font starts out life with each character a two dot column wide vertical line. Changing the width of each new character must be done individually. It would have been nice to be able to set an 'average' width for all the characters to start out and then modify accordingly. Clicking the '+' box was the most irksome way to widen the workspace to design a new character. Each

click equals one dot column and requires a complete redrawing of half the screen, regardless of the font size. Each update must be completed before the next mouse click registers. Moving from a two to an eight dot width became a tortuous process less than halfway through my new font. The other way to expand the width is preferable, but requires using the keyboard. Sigh.

The second irk concerns decreasing the width; the program automatically assumed that the rightmost dot column is empty (for the spaces between letters.) Changing the width from eight to seven, for example, erases all of the dots in column seven. This is a real nuisance if you are trying to design a font in which the characters are supposed to run together - like, naturally, I happened to be trying to do. An option should be available here.

Otherwise, GeoFont ran like a champ. Like most character (and sprite) editors, there are controls for repositioning the current character inside the work area, and for loading old fonts, modifying them, and saving them as new fonts.

PATTERN EDITOR

GEOS supports 32 different patterns which can be used by any application's screen displays, or from within GeoPaint as drawing tools. Some are your basic logical useful patterns - dithering, lines, herringbones, etc. Other are, well... different. With PATTERN EDITOR, you can change the different GEOS patterns so they can be logical and useful, too. PATTERN EDITOR comes up as a window over the deskTop and none of the command menus respond while it is running. You select an Exit box within the window to exit the program.

The Editing Screen of PATTERN EDITOR displays the 32 current patterns, an 8 by 8 pixel edit workspace, an 8 by 8 pixel edit buffer, and a patch display that shows what a field full of the pattern currently in the edit box would look like at normal resolution. Patterns can be moved freely from the Edit box, Buffer and the computer's stored patterns by clicking simple arrow and sprite pointer controls.

New patterns can also be saved to disk, loaded from disk or the system can be returned to the default patterns by simply clicking the appropriate control box on the screen.

AND...

Myth Conceptions is a small company, so it is somewhat of a blessing that Berkeley has acquired geoFont from them. The program will have a higher visibility and will be easier to

find, and it's probable that Myth Conceptions will make even more money than they would have by marketing it themselves. Everybody wins. The programs are as satisfying and useful in their way as those which BSW has developed in-house. With GeoFont, you could theoretically create your own Fontpack disks and save money (disallowing for the moment that time is very often money, too.) There are currently many GeoFont-designed fonts available in the public domain.

PATTERN EDITOR is a must for serious GeoPaint 'artistes'. GeoDump is the poor man's Grabbit (a screen dump utility for the Amiga.) And for those with multiple input devices and printers, CHANGE INPUT and CHANGE PRINTER are bound to be very useful desk accessories.

I am less certain about the need for AUTO PREFERENCE to prompt setting the correct date every time you boot GEOS. (Amiga and all, I am still not sold on the value of date-stamping files, but that's just me.)

NOTE: As of this writing, Berkeley has stopped shipping geoFile and is working out the bugs. They will ship as soon as they're done, and will send a free update to those who purchased early. In the meantime, hold on.

YET TO COME: A look at two GEOS books, GEOS support on QLink, GEOS for the C128, some public domain GEOS programs, Mystic Jim's GEOSware, the final version of geoFile, and a look at geoPublish and geoProgrammer!

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415-644-0883

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ABOUT THE AUTHOR:

INFO Contributing Editor Don Romero is the editor of the Western Indiana Commodore Users Group newsletter, Word Wrap. He is also the devilishly clever mind behind the C.H.U.M.P. magazine parody in issue #15.

CCSZ - CLOCK /CALENDAR

by Robert W. Baker

CCSZ CLOCK CARTRIDGE	INFO-rated
Jason-Ranheim \$49.95	★★★★
1805 Industrial Dr.	
Auburn CA 95603	
916-823-3284	
Easy to use battery-backed clock/calendar cartridge for the C64/128. Includes 8k bytes of battery-backed RAM, plus socket for user EPROM. Includes disk file time and date stamping with compatible directory display. Provides auto load and run plus power on/off logging for unattended applications. -RB	

Here's an extremely easy way to add a battery-backed clock/calendar to your C64 or C128. Simply plug in the CCSZ cartridge from Jason-Ranheim, set the clock, and the correct time will always be readily available. As an added bonus, you get an extra 8k bytes of battery-backed static RAM (B-RAM), plus an open socket for your own EPROM-based auto-starting programs. All the software to operate the clock is already in the cartridge itself, along with plenty of added features.

SETUP

When you first get the CCSZ cartridge, you'll need to plug it into your system and leave it turned on for a day or so to recharge the internal nicad battery. Once the battery is fully charged, it will maintain full operation of the cartridge for approximately 18 months even when removed from your computer. (As usual, do not attempt to install or remove any cartridge without first turning off your computer!)

Once the battery is fully charged you'll need to set the time and date and establish the proper options for your system. To access the internal functions you simply hold the CTRL key on your keyboard while turning on your computer. When the system comes on, you'll see the CCSZ options menu displayed instead of the normal Commodore BASIC heading. Following the simple prompts, the cartridge will be ready to use.

The data from the battery-backed clock in the cartridge is moved to one of the CIA clocks in your C64/128 during initialization. Since your computer has two CIA chips, you can choose which one to use from the CCSZ options menu.

Your software can then access the data from the appropriate CIA registers whenever needed.

Another option selectable from the menu allows having the current time, or the date and time, constantly displayed on the screen. This handy "time tick" occupies the upper right hand corner of the screen, overlaying anything normally displayed.

One of the handiest features of the CCSZ cartridge is its ability to automatically time and date stamp your disk files. When enabled, the time and date is recorded within 4 unused bytes of the directory entry whenever a file is saved to disk. Additionally, you can also stamp files whenever you load them. This feature is fully compatible with the TimeDOS utility from Family Software, and even uses licensed TimeDOS routines within the CCSZ software.

If you really want to get fancy, there are several options which allow you to have a program automatically run when your system is powered on or reset. The program can be stored in an added application ROM or the standard B-RAM within the CCSZ cartridge, or it can be loaded from disk. Various parameters allow you to specify a program name, select the disk drive number, control the initial operating mode on a C128 system, and control program relocation (like when using the ",8,1" in a load command).

One potentially nasty side effect of the auto-load capability is that it disables the normal auto-boot function on the C128, and disables the BASIC 7.0 BOOT command as well. There are ways around this limitation, but you have to give up some other feature to get the normal auto-boot to function. This may or may not be a problem, depending on your application.

After selecting all the desired options, the data is stored within the CCSZ B-RAM and your system is returned to normal operation. The cartridge is then more or less transparent except for a few hooks into the BASIC operating system. Some software will not operate with the cartridge installed, but with the battery-backed clock it's really not a problem to remove the cartridge when using incompatible software. There is no disable switch, but the cartridge can be disabled via software if required.

ADDED FEATURES

With the CCSZ cartridge installed in your system, a number of functions are available thru

the use of peeks and pokes in conjunction with a SYS call. There are literally too many options to list, but they include the ability to stash and store variable, string, and array data to and from the cartridge's B-RAM, read the current date and time, find the amount of free B-RAM, set the system variable TI\$ to the value of the CCSZ clock, enable or disable the cartridge temporarily, and access the internal power on/off logs maintained by the CCSZ cartridge. (The CCSZ records the date and time of the last 11 times power was turned off and the last 12 times power was turned on.)

Besides the functions available to your programs, there are also some features available from your keyboard in direct mode. For instance, you can easily display a disk directory with the time and date stamping data included by simply pressing the asterisk and return. This command can even be invoked from within the C128's monitor.

You can also load and save entire programs to the CCSZ B-RAM by simply addressing it as device 12 with the normal load and save commands. You can even include a ",1" in the load command to inhibit relocation. Just keep in mind that variables, arrays, and strings are cleared when saving a program to B-RAM. Also, you can only save one program in B-RAM at a time.

The 4364 RAM chip used for the CCSZ battery-backed B-RAM provides 8k bytes of storage, of which 256 bytes are reserved for use by the CCSZ software. All of the remaining storage is available in a C64 system. However, due to peculiarities in the C128 bus you'll only get 4k of total usable storage when the CCSZ is used in a C128, *regardless of what mode the C128 is in*. Be careful if you move the cartridge between C64 and C128 systems; you may wind up losing data.

TECHNICAL SPECS

The CCSZ cartridge was designed to be as transparent as possible while providing a variety of features with an easy user interface. It uses the IO2 control line and addresses in the range of \$DFF0 to \$DFFF hex. Additionally, the CCSZ software installs 27 bytes of transfer code at \$03E4 that must remain intact. The system vectors for IRQ, NMI, Charin, Charout, Load, Save, and SYS999 functions all funnel through the installed code in low memory. Additionally, the CCSZ cartridge generates an IRQ once a second and all interrupt handling must be able

TIME-DOS 64/128

Since CCSZ uses a time & date file stamping method originated by Family Software, we thought it might be informative to reprise Bob Baker's review of Time-DOS, which originally appeared in The Midnite Software Gazette.

-Mark

Time-DOS is a date and time stamping system for C64/128 systems with a 1541, 1571 or compatible disk drive. It wedges into the normal operating system and provides 10 new direct mode commands.

Time-DOS settings allow program files to be date & time stamped automatically when created or accessed. All file types can also be stamped manually either in the direct mode or under program control. The real-time clock/calendar (with auto-leap yr.) is accurate up to the year 2000.

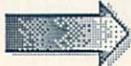
The utility is RAM resident and transparent to most BASIC or other programs. The C64 version uses locations \$C000-\$C980 while the C128 version uses free RAM at \$1300-\$1BE0. Both versions use the time-of-day clock contained in the 6526 CIA #2.

Time and date stamps do not consume any user disk space or directory blocks. The information is placed in the four unused bytes following the byte reserved for the relative file record length found in every directory entry. Any Time-DOS stamped disk may be used normally since the data is invisible to the standard DOS routines. Time-DOS includes a new directory command that displays the usual directory plus the added time and date information for stamped files. The ability to automatically stamp files is extremely handy for many applications and greatly enhances the normal directory information.

A demo program is also included on the \$19.95 Time-DOS distribution disk. If interested, a copy of the demo program is available for downloading from the CIN New Products Information download library on QuantumLink.

Highly Recommended!

Family Software, 3164 Surrey Lane, Aston PA 19014, 215-497-5561



to deal with this interrupt and allow the CCSZ software to gain control.

Because of the above restrictions, some software is not compatible with the CCSZ cartridge and will require the cartridge to be disabled or removed in order for them to run correctly. Jason-Ranheim has information available on modifications that can be made to Bob's Term Pro 128, Sixth Sense 128, and Sixth Sense 64 to allow them to work with the CCSZ cartridge. However, the cartridge does not appear to be usable with the CP/M mode on the C128 system.

CONCLUSIONS

I've encountered no problems with the cartridge and found the documentation to be excellent. Functional descriptions are detailed, with plenty of examples. You should be able to find the answer to anything you need to know about the cartridge and the associated software. Everything is well thought out and extremely easy to use.

Personally, I've found the automatic time and date stamping to be extremely valuable during program development. How many times have you saved various versions of a new program you're writing and then later forgotten which was the latest version? With the CCSZ cartridge installed, you know exactly which file was the last one saved on disk.

Many of the available program functions are designed to support unattended applications, such as BBS or industrial systems. These functions would allow the system to survive power outages and restore to full operation when power is returned to the system. Although not intended for everyone, the cartridge is extremely powerful and flexible enough to be usable in a number of applications. For those who have a need, and some programming experience to help them develop the proper code, they should find the CCSZ an extremely valuable and capable product.

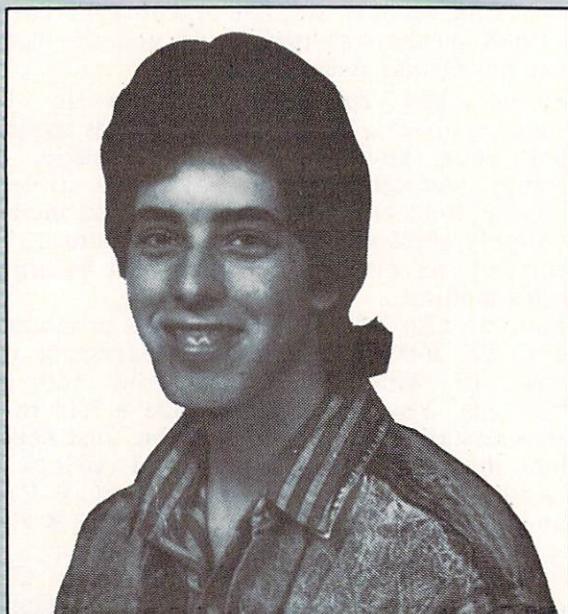


ABOUT THE AUTHOR:

Robert Baker runs the popular New Products forum on QuantumLink. He has written extensively about personal computers since the early days of this industry, and his credits include Byte, Compute!, and Commodore magazines. Bob's articles have been a regular feature in the pages of The Midnite Software Gazette, and we're happy to welcome him to INFO. You can reach him on QLink as RBaker.

AMIGA 500 SWEEPSTAKES WINNER

We'd like to thank all of you for the thousands of entries you sent in for the INFO AMIGA 500 SWEEPSTAKES in issue #15. We're sorry you couldn't all win (especially the guy who sent in 500 entries!), but we thought you'd like to meet the one who did:



Mark Straus Rough & Ready, California

Mark is 18 and a freshman at Sierra College in California, and he has been computing with Commodore computers for six years. He started out on a VIC-20, upgraded to a Commodore 64, and is now moving up to his new Amiga 500 system. He says he'll use his Amiga 500 for college schoolwork and recreation, and may even set up a BBS system.

CONGRATULATIONS, MARK!

To all of you who *didn't* win this time: Don't Despair! We're already planning the next INFO AMIGA GIVEAWAY! Watch these pages for details!



WORD WRITER 3

by Karl T. Thurber, Jr.

WORDWRITER 3 \$49.95

Timeworks, Inc.
444 Lake Cook Road
Deerfield IL 60015

INFO-rated



VI7-1.0: A much improved, affordable wordprocessor still lacking in some basic features. The updated program offers preset printer files and a bit-mapped print preview mode. An 85,000-word spell checker and 60,000-word thesaurus are standard. The built-in calculator, data sharing capability, and outline processor add the finishing touches to this competent but somewhat awkward 40-column program.

-KT

Timeworks' Word Writer 3 is the latest in the series of Word Writer wordprocessors. It's also an outliner, spell checker, and thesaurus that allows you to create, edit, and rearrange text and data with relative ease. It's designed to share data with Data Manager 2, SwiftCalc, Sylvia Porter's Financial Planner, and GEOS.

The program comes on two unprotected disks. The wordprocessor and dictionary are on a floppy, while the thesaurus is on a second disk. Documentation is a 126-page, spiral bound user's manual, along with a keyboard overlay. The manual is well written and has a detailed table of contents, an index, and chapters on the major program features. The manual includes a short tutorial and several reference sections, including a troubleshooting and quick reference guide. The disk includes two sample files but no tutorial.

OLD PROGRAM, NEW FEATURES

In Word Writer 3, most controls and commands are entered using various Commodore-key and CTRL-key combinations; some are embedded in the text using an instruction preceded by a special check-mark character. A welcome addition is the bit-mapped print preview function, which includes on-screen underscore and highlighting. This allows you to see how the final text will appear, including page breaks, headers, and footers.

You can insert, move, copy, and delete text; indent paragraphs with varying left and right margins; use up to 200 tabs at a time; print underlining, superscripts, subscripts, boldface letters, and other special effects; add headers and footers; search and replace words and phrases; and automatically center and justify

text. The program also features document chaining (non-automatic); text formatting and reformatting, to maintain your margins after editing text; form letter generation; file merging; page numbering and skipping; horizontal and vertical scrolling; and control of screen colors. There also is a file conversion utility and a full set of disk utility commands.

Word Writer 3 also allows you to save default screen, printer, and other preferences for automatic setup on loading. A memory checking function tells how much free computer memory you have, both bytes free and percentage remaining. The program also has a flexible and fast set of cursor control movements and a labor-saving repeat key function.

The program disk includes about 30 preset printer files. Helpfully, the manual shows you how to create your own custom printer file if there isn't one for your printer. You can open up two windows on the screen to facilitate printing functions: one is the printer codes window, used to modify printer codes for your printer; the other is the printer options window for a final check on format settings before printing.

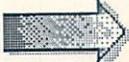
OUTLINE PROCESSOR

A nice plus is the outliner. With it, you can make the task of writing detailed outlines for your reports a snap, by simplifying the creation of a framework on which to build your document. The program offers you five levels of outline with corresponding indentation.

You enter the outline mode by using a two-key combination. Once in the outliner, you can do such things as saving the original document (in case you forgot to do so); automatically inserting the correct letter or number for your current location in the outline; taking care of indexing and re-indexing the outline; moving the outline up or down various levels; and saving or loading an outline. When you exit the outliner, you're returned to Word Writer 3 with your outline still in memory, just like a regular document. Once you're back in the document, you must work manually with the combined outline and text.

SPELL CHECKER

Another feature is the 85,000-word spell checker. It's an integral part of the program, with documents being checked in memory rather



than being processed outside the program, which would require reloading to edit. Like most Commodore spell checkers, it's slow: 6.5 minutes to check the one page sample document, for example.

The main dictionary resides on the back side of the program disk. You can add specialized sub-dictionaries containing up to 3,000 additional words. While the program can't learn new words directly from the documents it checks, you can save suspect word lists and add them to your sub-dictionaries. Because of the 64's memory constraints, you have to limit your documents to 10 pages, and this applies to spell checking as well. But the spell checker is easy to use and should present few problems to the beginner.

THESAURUS

A nice feature for wordsmiths is the built-in thesaurus. This feature provides synonyms, called up from disk by a two-key sequence. To use the 60,000-word thesaurus you simply insert the thesaurus disk in the drive and place the cursor anywhere on the word you want to check or replace. After activating the thesaurus, it presents you with a numbered list of words (often quite lengthy) for your consideration. You can then replace the questionable word in your text with one of the synonyms, or you can go back to the document without making any changes. As with the spell checker, documents are acted on in-memory.

OTHER FEATURES

Timeworks has thrown in a few extra goodies, too. One of these is a multifunction calculator. Besides doing most of the things you expect calculators to do, it also allows you to place your computation in the document that you're working with--a handy feature for those whose wordprocessing tasks run along mathematical lines.

You can also share data with other programs. When interfaced with Data Manager 2, you have a basic mailing list maintenance system and customized report writer. The mailing list function allows you to print addresses directly onto standard mailing labels and insert addresses into your letters. You can also generate customized reports with Data Manager 2, SwiftCalc, or the Sylvia Porter program and transfer these reports into Word Writer 3.

Another nice feature is the communications (file conversion) utility that allows you to convert Word Writer 3 files to PETASCII files

```

ENTER WORD #, CURSOR UP/DOWN, OR RETURN

WORD: different 1 OF 1
1 differentiated 2 disparate
3 dissimilar 4 distinct
5 divergent 6 diverse
7 other 8 unique
8 various

WORD WRITER 3 can produce special type s
control codes to your printer. This doc
examples of several different type style
this document to view them, but first, m
have set codes 1 through 4 on the Printe
by having created a PRINTER.DEF file, to
for your printer (ctrl-L) or manually en
codes (press the C= and # keys to view t
+
rc4,c3,c2,c1+
Entering these four codes on one line
you to print Code 4 - Code 3 - Code 2 as
specified by the (C= #) window, all on o

```

and vice versa. This capability is useful to produce Word Writer 3 documents in a standard form that communications terminal programs and other wordprocessors can use.

The new update is compatible with GEOS, via GEOWrite, so you can dress up your text and print it out with fancy fonts. To do this, Word Writer 3 documents must first be converted to a form that GEOWrite can understand. Then you use the GEOWrite paste function to place your converted text in the GEOS document. However, due to GEOS' constraints, you can only transfer a document of 6,000 characters (about three pages). Longer documents can be transferred, but only in three-page chunks.

WHAT I LIKED...

Word Writer 3 includes full wordwrap, text formatting, and print preview features which make entering, editing, manipulating, and proofreading text more enjoyable than in previous versions. Too, I liked the ability to save default settings, including setting up different drives for the dictionary, thesaurus, and data disks.

The program's most outstanding feature is its completeness. This is especially important to students, who have at their disposal a single program that can handle most basic wordprocessing tasks, and which also has extras such as an outliner, spell checker, and thesaurus. The data sharing feature which allows exchange of data with Data Manager 2, SwiftCalc, Sylvia Porter, and GEOS will be useful to some.

While the extra tools are not essential to good wordprocessing results, anyone who has used them in producing serious work knows their value. I, for one, would never submit to an instructor, boss, or editor a report or manuscript that I hadn't run through a spell checker, if for no other reason than to check for typos if not outright spelling errors.

...AND DIDN'T LIKE

Rather disappointing is Timeworks' seeming inattention to some wordprocessing basics. While they've added many new capabilities, several meat-and-potatoes features need some sprucing up. For example, there is no word counter, and the move and copy commands are limited--they don't provide the sophisticated cut and paste that most advanced wordprocessors offer. You can only move or copy text in whole line segments, rather than snipping with some flexibility. This requires that you clean things up after executing the move or copy. The delete command needs work, too: you can delete single characters, words, returns, lines, and to end-of-text with the press of a key. But you can't conveniently delete a sentence or user-definable sentence fragment.

Documents are limited to 10 pages. While you can chain files to print documents up to 250 pages in length, file chaining isn't automatic. You have to manually print out each file segment, load the next and print it out, and so on, until the complete document has been printed. This procedure is archaic; even the older 64 wordprocessors chained documents automatically. In the spell checker (which is slow) you have to save parts of the document under different filenames and spell check each segment.

I also didn't care for some of the Commodore- and CTRL-key commands. Many of these command sequences weren't related mnemonically or logically to the function being carried out. You have to rely heavily on the keyboard overlay, so don't lose it!

FRINGE BENEFITS

One benefit of owning a Timeworks software package is the free after-sale telephone support. This actually works, though in the past it has been a problem getting through on the toll-free lines. Apparently, Timeworks sought to clear the decks by changing their number to a regular (toll) line. Only registered owners are supported over the phone, so be sure to send in your software registration card.

Timeworks also has opened up a publisher's area on QuantumLink. You can access the Timeworks support team, discuss problems with other users via a message board, and attend online conferences as well as download archives of previous conferences. You can also download a Word Writer 3 demo on QuantumLink. These activities are in extra-charge plus areas, however.

There also is a liberal upgrade policy, whereby you can upgrade to newer program versions for a nominal charge. In addition, there's an exchange privilege should you change to a different computer and want to upgrade your software for the new machine.

If you can't get things running right after a few help sessions and feel that the product doesn't meet your needs, Timeworks offers a 90-day money-back guarantee. If you find another product that works better for you, and if it's available, Timeworks will take back your program and obtain the new one for you. The only additional cost is for any retail price difference and shipping/handling charges.

SUMMING UP:

Commodore users who are familiar with the old Word Writer will be at home with the newest upgrade. But if you are a fan of the format-command standbys such as EasyScript, PaperClip, or WordPro, you may be uncomfortable with Word Writer 3, which operates much differently.

I have mixed feelings about the upgrade. True, it's jam-packed with new and impressive features and capabilities that tax the performance limits of the 64; in fairness, the program is dramatically improved over what it was four years ago, when it was sold at the same price.

But I'm uneasy with some of its awkward characteristics, such as the manual file chaining and hard to remember command sequences; the inattention to some wordprocessing basics is also troublesome. For Word Writer 3 to compete with the top Commodore wordprocessors, Timeworks needs to look to some of these deficiencies. But, if you're a Word Writer fan, this latest incarnation may indeed be for you. And considering Timeworks' excellent support and money-back guarantee, there's little risk in seeing for yourself if Word Writer 3 lives up to Timeworks' claims for it.



ABOUT THE AUTHOR

Karl Thurber is a veteran of 22 years with the Air Force and is now pursuing fulltime graduate studies at Auburn University. Karl's been into writing electronics, computer, and amateur radio articles since the mid-1970s, and he now has more than 150 to his credit. He's a member of his local users group, the Montgomery Area Commodore Komputer Society (MACKS).



C128 AND 1571 ROM UPGRADES

by Tim Sickbert

NEW ROMS

As surprising as it may sound, computers don't always work right. Just like the programs you write don't always do what you expected, the programs etched in stone inside your computer and disk drive--the Kernel, BASIC language, screen editor, and DOS--sometimes have trouble.

A ROM (Read Only Memory) is the permanent memory that contains these programs. The programs inside these silicon chips are permanent. Once made, the program in a ROM cannot be changed. If there is a bug in the program, you have to live with it...at least until there's an upgrade. Late this spring, Commodore released a new set of ROMs for the C128 and C1571. These new ROMs fix most of the bugs that bothered C128 users.

BUGS

Though you might not have noticed that your C128's SID chip was not perfectly tuned to concert pitch, you probably *did* notice that the CAPS LOCK key worked perfectly until you pressed 'q'. Likewise with the 1571 disk drive: you may not have ever noticed that the disk timing constant was trimmed by almost half in comparison to the 1541, but you probably noticed that it took nearly forever to write a sequential file to the second side of a 1571 disk. Yep, your C128 system was shipped with lots of little glitches. Some of them were obvious; others were so nearly invisible that it is a wonder that anybody caught them all (or were they really all caught?).

In any case, Commodore has released new ROMs for the C128 and 1571 that take care of most of the known bugs. Why not all of them? Some of the bugs have been around since the first Personal Electronic Transactor (PET) 2001. Killing the bug might be easy, but thousands of programs have been written around--or even using--these bugs. For example, the BASIC mathematical routines will happily give you the result of (-2^{15}) . Changing this now would kill a number of programs.

Most operating systems go through at least a couple of revisions, and some are never truly permanent until the machine is dead--kind of

like Latin. The business world is now up to MS-DOS version 3.3 (or later) and the actual version number of the current Amiga OS is up somewhere around 33. All things considered, the C128 and 1571 ROMs are pretty sound.

The original C128 came equipped with three ROM chips: BASIC low; BASIC high/monitor; and the KERNAL-CP/M-editor. Commodore has since redesigned the circuit board inside the computer so it is cheaper to make, and in doing so crammed the contents of these three chips onto two chips. To the user these two versions of the machine are identical, except for hardware accessories which require an internal jumper (an IEEE or hard drive interface). I have not yet seen any of the newer cost-reduced (CR) or two-ROM models off the line, so my discussion will cover only the original C128 boards.

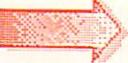
Likewise, a cost-reduced 1571 has been designed, but never produced. Both versions of the 1571 have a single ROM chip that contains the Disk Operating System for all of the 1571 modes: single sided 1541 emulation; double-sided 1571 mode; and CP/M. (The CP/M DOS is actually not in drive ROM--the drive uses only a little bit of code for basic communications. CP/M uses the Z80 inside the computer to keep track of what is going on in the disk drive.)

DO YOU NEED NEW ROMS?

The new ROMs for the original C128 and 1571 are both available now (prices and where to order are provided at the end of the article). But do you really need new ROMS? First, let's consider what the ROMs actually do and then consider what the new ROMs do better than the old ones.

In the C128, the ROMs contain the BASIC language, the machine language monitor, the screen editor, the Kernel, and a little bit of code for CP/M. The first point to make is that if you do not write your own programs you probably do not need the new C128 ROMs. Consider that more than one million machines were sold with the old ROMs and that every commercial program that comes out will support the old ROMs. New ROMs will not do much for you if every program you use comes out of a box.

Even if you do write your own programs, it is unlikely that very many of the original bugs will



give you problems. It may sound bad that the CHAR command would corrupt locations \$D600 and \$D601 (decimal 54784 and 54785) in RAM bank 0, but it is not so bad when you realize that you would have to write a program thirty eight thousand bytes long (assuming that you are using the graphics screen--your program would have to be forty-six thousand bytes long if you don't) before that little glitch will corrupt your program. And if you did have a program that big, you just might have a bit of trouble with DELETEing your last few lines.

Granted, some of the C128 ROM bugs could be a nuisance, but few of them will kill your data and most of them can be worked around rather easily. If you do much programming, the new C128 ROMs may be worth it. If you don't do much programming or if you write small to medium sized programs, you can probably get along quite well with the original ROMs.

The 1571 ROMs are a bit of a different story, and for two very important reasons: speed and reliability. Commodore gave us many good things in the original 1571. Compared to the 1541, it has twice the storage capacity per disk, it is three to five times as fast, and it can read and write many different disk formats (not to mention the soft stop that keeps it from going out of alignment quite so often, and the device jumper switch on the back). But the truth of the matter is that the 1571 DOS is little more than the seven year old 4040 DOS rewritten, adapted, and patched. The original 1571 still wanted to believe that there could possibly be a second disk drive in a single device, and some of the support code probably remains even in the most recent revision. So, 1571 users inherited the notorious SAVE-with-replace bug and, although the drive can write to both sides of the disk, the original ROMs did were rather lazy about it and occasionally forgot what they were doing.

Although the computer itself is the real brains of the computer system, the drive is the heart. Without a way to store and retrieve programs, documents, and games, the computer would be rather worthless. The bugs that you bought with the 1571 gave the heart of your system a murmur. You could write to the second side of a disk, but it might take forever. And if you were writing to both sides of the disk and had more than one file open at a time, you might lose one of them. Or lose both of them. Or lose neither of those two and lose the next file you wrote. You could use the save-with-replace feature, but chances were that you would lose one or more files sooner or later. And relative files were not much better, especially if one wrote over the edge and had part of the file on

each side of the disk.

So, while most users can live comfortably with the old C128 ROMs, the old 1571 ROMs have quite a few problems that are well worth fixing. But Commodore has been known to do some odd things in the past, so it is not inconceivable that the new ROMs *could* be just as bad as the old, or maybe even worse. The version 2 ROMs for the C64, for example, had just as many bugs as the original ROM, and some of them were worse. So to be sure that the new C128 and 1571 ROMs are all they are cracked up to be, I tested them.

THE TEST LAB

For the C128, I simply went down the list of corrections as given in Commodore Engineer Fred Bowen's public letter of December 1986 and tested changed functions or commands that a fairly normal user would be likely to encounter. For example, I tested the LIST, DELETE, and RENumber commands in the editor, the RSSPRITE, RSPOS, and relative coordinate plotting for graphics commands, and used the PRINT USING command with all sorts of strings and numbers. On the other hand, I did not test the 8563 VDC initialization for PAL (European) systems nor most of the other low level Kernal level commands.

The result is simply that the original C128 ROMs were not all that bad. The new ROMs are a little better. Everything I tested using the new ROMs worked as I expected it to and as Mr. Bowen's letter of last December indicated it would. A complete list of tests I conducted and the programs or methods I used to conduct them are available on request [from the author].

Being that Commodore disk drives since the VIC 1540 have been something of an Achilles' heel for Commodore systems, I tested the new 1571 ROMs more extensively. Having two drives, I left the original ROM in one drive (device 8) and put a new ROM in the other (device 9) and then wrote programs that first tested the new ROM and then the old. I really tried to push the drives to their limits. Unlike most of the C128 bugs which you can work around or avoid entirely, a couple of the programs that performed flawlessly with the new 1571 ROM never even finished on the old ROM.

Some of the fixes were fairly easy to test. For example, the original ROM took quite a long time to write most files to the second side of the disk because it accessed the BAM (Block Allocation Map) every time it wrote a block. The new ROM only accesses the BAM when it

starts to write the file, when it finishes the file, and occasionally when it changes tracks. (An interesting sidenote: I could not use the computer to time these tests involving the new and old disk ROMs...the time reported for the old ROM was generally substantially less than the time reported for the new ROM even though the old ROM actually takes much longer. I have not tracked down the reason for this, but it seems that the old ROM partially releases the serial bus and lets the computer start processing subsequent commands before the drive is actually finished.)

Table 1 shows the times it took to write five 50 block files to side one of the 1571 drive using the new and the old ROMs. The timing was done by hand so it is not absolutely accurate.

Table 1 Write times to side 1

<u>ROM</u>	<u>OLD</u>	<u>NEW</u>
1	135.23	27.53
2	136.37	26.78
3	141.35	27.01
4	145.59	27.24
5	150.64	28.00
TOTAL	709.18	27.28
AVG	141.84	27.28

The new ROMs write to side one 5.2 times faster than the old ROMs. If you often use your drive for sequential files, this alone is reason enough to get the new chips.

The next reported problem I tested involved the BAM Swap Bug. This bug corrupts the BAM when more than one file is being written to and is especially troublesome when data is being written to both sides of the disk. To test the bug, I created a 600 block dummy file on side 0, closed it, then opened three files and wrote 1 block to each file 30 times. At first glance, both drives seemed to perform identically, showing 634 blocks free¹. It got interesting when I started scratching the 30 block test files one by

¹ The 1571 ROMs, both old and new, have the oddity of allocating an extra block when the file you are writing is an exact multiple of 254 bytes (1 block) long. It apparently allocates the next block in anticipation of the next byte, which never gets there. I have not encountered any problems from this, but it does take 1 extra block for each such file. Validating the disk does not correct this.

one. The directory excerpts given in Table 2, below, show the results.

Table 2 Demonstration of BAM Swap Bugs

NEW ROM	OLD ROM
<u>After creating all files</u>	
600 "big file"	600 "big file"
30 "test2"	30 "test2"
30 "test3"	30 "test3"
30 "test4"	30 "test4"
634 blocks free	634 blocks free
<u>After scratching "test2"</u>	
665 blocks free	655 blocks free
<u>After scratching "test3"</u>	
696 blocks free	676 blocks free
<u>After scratching "test2"</u>	
726 blocks free	697 blocks free
<u>After validating</u>	
728 blocks free	728 blocks free

These results may not look terribly dramatic, but consider how confused the BAM must be! In a similar test which involved validating the disk after each scratch, the BAM showed that the disk had more blocks free than were possible. Specifically, after using the old ROM to write several sequential files over the edge of the disk (on both side 0 and 1), then scratching a file and validating, the directory showed:

BEFORE	AFTER
600 "big file"	600 "big file"
19 "file 1"	19 "file 1"
38 "file 2"	38 "file 2"
660 blocks free	677 blocks free

This is even more dangerous. A bit of arithmetic shows that after scratching file 3 there should be 671 blocks free. After validating, the BAM shows that there are 677 blocks free. Somewhere on the disk there are six data blocks which the drive will overwrite.

You can avoid the BAM Swap Bug by opening only a single file to the disk at any one time, but this severely limits what you can do. And not all commercial programs will confine themselves to this. The BAM Swap Bug is, quite simply, a time bomb that is waiting to corrupt your data disks.

The new 1571 ROM handles the BAM much better. When writing multiple files over the edge

of the disk, I could not get it to corrupt the BAM. And I tried just about every variation and sequence of writing, scratching, writing again, appending, and validating that I could think of. The new ROM seems to work.

After testing the write time and the BAM swap, I tried a number of programs using WRITE@ (write with replace, e.g. OPEN 2,8,2, @0:SEQUENTIAL FILE, S, W), writing over the edge and on side one. The programs I wrote to test these should work, according to the documentation. And using the new ROMs, they worked just fine. Using the old ROMs, they crashed.

If the BAM Swap tests confused the old ROMs, the programs testing the WRITE@ that worked on the new ROMs sent the old ROMs to Bedlam. When I ran the program, the old ROM reported DOS error 72, disk full. DCLOSE failed, reporting NO CHANNEL, and a directory reported 336 blocks free when there should have been 468 blocks free. After validating the disk, the directory reported 654 blocks free...almost 200 blocks more than there should have been.

I got similar results when I tried writing relative files over the edge. Again, the new ROM performed almost flawlessly. The old ROM crashed with a DOS 67, illegal track or sector,00,00 error and totally corrupted data. Just getting the files closed after testing REL files required a hardware reset.

The actual SAVE@ bug proved hard to test. In fact, I could not get the old ROM to corrupt the disk under controlled conditions. I had, however, used SAVE@ with the old ROM several times over the past two years, and corrupted a good half dozen disks. I quit using SAVE@ with the old ROM. I have been using SAVE@ with the new ROMs almost constantly for the past three months and have yet to corrupt a file. Although not very scientific, I do believe that the old ROMs do not correctly handle SAVE@; the new ROMs seem to handle it well.

Before I was asked to write this article, I had never really paid much attention to the 1571 ROMs and had not worried too much about the reported bugs. Very few of them caused me real trouble. I knew enough (after losing a couple files) not to try SAVE@, and I simply avoided writing to the second side of the disk. The faster loading speed seemed enough to make the drive worth the extra money. Researching this article, I learned just how bad the old ROMs really are and I was surprised that I had not encountered more problems with it before. Looking back, I can see that some of what I had

thought were operator errors or software bugs were really the fault of the drive.

TO BUY OR NOT TO BUY

So, do you want to get new ROMs for your C128 and 1571 system? For the 1571 I give a categorical and emphatic YES! The new 1571 ROM speeds up the performance and reliability of your system. As for the C128 ROMs, I recommend them but feel that they are certainly not required unless you do quite a bit of heavy duty programming. The differences are certainly there, and they are more pleasant to work with, but the differences are not great enough to enable you to do that much more with the system.

If you do decide to get new ROMs, they must, of course, be installed. This is not particularly difficult, but it does require time and patience. If you have not installed ROMs before, get somebody (like a local techie) to help. If you want to do it yourself, I recommend that you consult with your local users group or ask around on QLink. Remember that simply opening the case of the computer or disk drive voids the warranty. And, UNPLUG ALL EQUIPMENT BEFORE YOU TRY ANYTHING. I cannot recommend that you replace the ROMs yourself, but I can recommend that if you are going to, do it on a cool rainy afternoon when you have an hour or so to take the time to do it carefully.

To get your new ROMs, try your local Commodore shop, check out a mail-order outlet that specializes in chips (like JameCo or K. Boufal), or contact Commodore Service directly. The C128 chipset is \$24.95 ppd. and the 1571 ROM is \$9.95 ppd. from: Commodore Service, 1200 Wilson Dr., West Chester PA 19380. We understand that Commodore is running behind in filling ROM orders, so be sure to try the other sources first.



ABOUT THE AUTHOR

Tim Sickbert was the Editor of The Midnite Software Gazette during its final year and a half of autonomy, and we're glad to be welcoming him to the pages of INFO. Tim is 24 years old and holds a degree in English from The University of Illinois. His day job is writing documentation for Computer Teaching Corporation in Champaign, Illinois.

INFO UPDATE

C128D VIDEO RAM

We reported in the Rumor Mill last time that we had heard the new C128D might ship with 64K of 80-column video RAM. Now that the machines are actually available, we have found that the rumor is true. Without special software to access it, it doesn't do you much good, but with the right program, it's great. For example, BASIC 8.0 from Patech lets you use the additional RAM to create hi-res graphics virtual screens much larger than the visible screen, with screen resolutions up to 640x800 (monochrome). By the way, we've heard discount/sale prices on the 128D are as low as \$449.95 already in some areas.

AMIGA TRADE-INS

We've heard from dealers, readers, bums on the street--everybody but Commodore--that the \$1000 trade-in allowance for an A1000 when you buy an A2000 is a sure thing. Commodore is still not committing to it officially at presstime. I'm sure by the time you read this, it will all be history.

By the way, the rumor about a C64 trade-in for a free WordPerfect when you buy an A500 (which we passed along in the last Rumor Mill) turned out to be false. The WordPerfect deal involved a special offer to Commodore user groups.

THE FCC

The FCC is still considering a surcharge on interstate telecommunications that could cost home and business computerists from \$4 to \$10 an hour for online access to national networks like QLink, PLINK, GENIE, and CompuServe (see INFO #16). We've had lots of folks ask us for the address of the FCC so they can protest. Here it is:

Federal Communications Commission
1919 M Street N.W.
Washington, DC 20554
attn: FCC Chairman D. Patrick
(202) 655-4000

If you use the networks, or if you just believe in the right to do so, don't delay in sending your opinion along to the FCC. Unless they change their decision, the rate hike goes into effect January first, effectively marking the end of the personal telecommunications networks.

THE SX-64 SHORTAGE

As we reported last issue, used SX-64s remain in short supply. We've had a lot of people ask us what theirs is worth. Our scientific survey of a couple of dozen classified ads in user group newsletters from around the nation indicates that a working SX-64 is currently going for anywhere from \$325 to \$450.

MICRO-ADS

Those of you who read the INFO unclassifieds last issue found the address of MicroAds and the real price of their Video Titler program for the C64. In the "Graphics Renaissance" article we listed the price as \$14.95; it should have been \$19.95. The address is: MicroAds, 145 Norman Dr., Palatine IL 60067.

MACVIEW C64

Paul Hughes, SYSOP PH on QLink, writes to straighten us out on MacView C64, mentioned in the graphics article last issue:

"You stated that MacView C64 will convert downloaded MacPaint files into geoPaint format. This is not the case. MacView C64 is available here on QLink in my Graphics SIG Utilities section. It is a short 13-block program that loads in an unconverted MacPaint file, then uses the cursor keys to scroll a 320 x 200 window to view the whole 576 x 720 area of the picture. MacGeoPaint 1.1 by James Hastings-Trew is the program that will convert a downloaded MacPaint file into a geoPaint picture in just 4-6 minutes!"

Thanks for the INFO, Paul.

INFO'S SURVIVAL GUIDE

Several people have written to ask where we got the prices we listed for the products recommended in the "Survival Guide" article in issue #15. We tried to list an average price for each product, somewhere between the full suggested retail and the discount price of each item. We figured that a median price would let people know when they were getting a good deal. We usually list full retail prices for products we mention, and we should have made it clear that we were *not* listing full retail in that article.





STARBOARD II RAM EXPANDER

by Warren Block

STARBOARD2 \$879
MicroBotics, Inc.
P.O. Box 855115
Richardson, TX 75085
(214) 437-5330

2 megs of autoconfigure fast RAM for the Amiga 1000. Well built, simple to install, expandable, dependable, and passes the expansion bus through. Also available in 512K and 1 Meg versions; user-upgradeable with inexpensive 256K RAM chips. Optional internal multifunction module adds battery-backed clock, 68881 math chip socket, and hardware recoverable RAM disk. Optional SCSI module. A superlative RAM expansion.

-WB

INFO-rated



Optionally, it can be used with Kickstart 1.1 with the AddMem program included on the disk, should the need ever arise. MicroBotics has left the customer's options open, too--the expansion port is duplicated on the right side of the box for future additions. Those who need truly gigantic memory space can even add another StarBoard2, for a total of 4 megabytes of RAM. It is possible to add more than two StarBoards, but the Amiga's power supply tends to become somewhat overdrawn with more than two of them installed.

INSTALLATION

The one-page instruction sheet provided is thorough, complete, and readable. Installation of the StarBoard is simple, provided you are careful and patient. After removing the Amiga's expansion cover and using a screwdriver with the included jackscrews to create threads in the computer's metal expansion port shield, the StarBoard2 is gently pushed onto the card-edge connector. The two jackscrews are then installed for both physical and electrical connection to the shield. The expansion port cover that was removed from the Amiga is then used to cover the port on the right side of the StarBoard2.

Some users will opt to purchase the StarBoard2 without its full complement of memory. The instruction sheet covers the addition of 256K, 150 nanosecond memory chips to the basic board to bring it to one megabyte, and the addition of the Upper Deck daughter board that adds the capacity for another megabyte. As specified in the instructions, only Texas Instruments, Hitachi, or Mitsubishi chips may be installed without voiding the warranty. Technically proficient users may wish to go this route, but the two megabyte version has several advantages--it avoids the possibility of accidental damage, is potentially cheaper than buying extra chips and the Upper Deck board, and avoids the installation hassle.

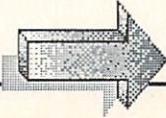
IN ACTION

The StarBoard2 has shown me what a short-sighted thing it was for Commodore to release the Amiga with only 512K of RAM. With the StarBoard2 the Amiga comes into its own--this is how it should have been! Programs and data

While the Amiga doesn't have the 640K total RAM barrier of MS-DOS computers, expansions to take advantage of its full eight megabyte address space have been slow in coming. One early entry in this field is the StarBoard2, a one-half, one, or two megabyte memory expansion box for the Amiga 1000 from MicroBotics. Included with the autoconfiguring, no-wait-state RAM box is a sheet of instructions, a disk with installation software for Kickstart/Workbench version 1.1 (unnecessary for version 1.2), and a warranty card. The two-megabyte version lists for \$879, but many dealers are offering substantial discounts. Prices will vary quite a bit on this item, because some dealers buy the 0K or 512K units and add the extra memory themselves. It's worth taking the extra time and trouble to shop around because of these wide price variations.

The StarBoard2 fits a fair amount of hardware in a small area. It is surprisingly small--only one and one-half inches wide, four inches high (the same as the A1000), and ten inches deep. When installed, it sticks out an inch from the back of the computer, leaving the mouse/joystick ports in the front accessible. The case is metal, with rounded corners, and is painted to blend into the Amiga exactly (most people don't even see it until it is pointed out to them). On the bottom of the case are two little rubber feet to protect your desktop.

StarBoard2 is an autoconfiguring device; when version 1.2 of Kickstart is used to boot the Amiga, the memory is automatically recognized and made available for programs and data.



no longer need to be shoehorned into a "puny" 512K. Total capacity of the machine becomes astounding--multitasking four or five programs while loading an entire 880K floppy into memory is easy. With all the commonly-needed DOS commands in RAM, operation of the CLI becomes quick and effortless. (Two public domain programs I have found extremely useful are GfxMem and CPri. I execute GfxMem, which displays a bar graph of how much memory is occupied, then set its priority to -10 or so with CPri. By doing this, it only runs when other programs relinquish the processor.)

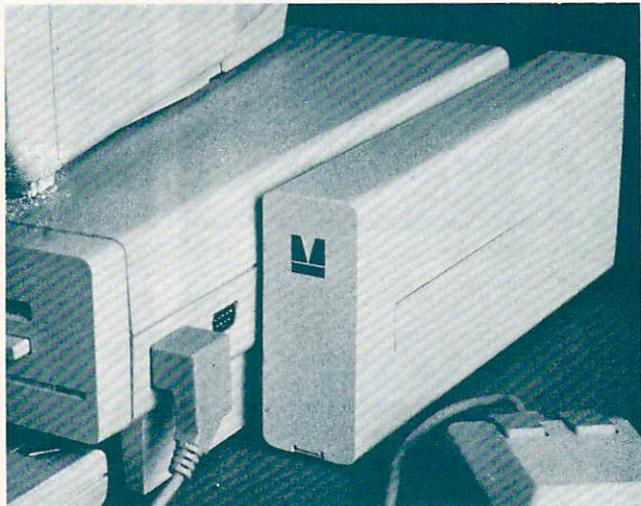
The only problem is not with the StarBoard2, but with older Amiga programs that do not expect the profusion of memory. In these programs, graphic data (like gadget images) is often garbled or completely invisible, due to the custom chips' inability to access more than 512K of RAM (chip memory). There are two solutions to this problem. The first is to simply boot the computer with Kickstart 1.1. Since version 1.1 doesn't acknowledge the presence of the extra memory, problem programs run as they did before. It's not easy to go back to a machine with only half a meg, though!

The other route involves another public domain program called FixHunk. This program modifies a program's object code on disk to force program data to be loaded into chip memory. So far, I have not found a program that FixHunk wouldn't, uh, fix. The public domain programs StarTerm and Hack and even Commodore's own Textcraft all had problems working with the external memory before I ran them through FixHunk; now, they work fine.

The only difference that the installation of the StarBoard2 has caused in the operation of my Amiga is a slightly increased amount of radio-frequency interference. In other words, there is a little more static audible on my radio when the expansion box is in use. That's it. I haven't experienced any of the incompatibility horrors that others have reported with some other Amiga RAM expansions. There have been mysterious glitches, crashes, or other unexplained gremlins. The most likely source of problems will be copy-protected programs; the only ones I have are games, and there have been no problems with any of them. All my other software works fine, although some older programs initially had the gadget image problem that I described above.

CONCLUSIONS

I ordered a StarBoard2 expecting a cheap but usable memory box. I received a well-made,



StarBoard2. A lot of potential in a small box.

dependable, upgradeable Amiga RAM expansion. The StarBoard2 has the small size and low cost of other Amiga RAM boxes, but adds the very desirable pluses of affordable expandability (with 256Kbit chips, rather than their still-expensive 1 Mbit counterparts), and a pass-through design that allows for future expansions. For the near future, MicroBotics has promised two cards that fit inside the StarBoard2: a multifunction module that provides such features as a battery-backed clock, a socket for a 68881 math coprocessor, and a hardware write-protected RAM disk that survives resets; and a SCSI module to interface with a hard disk. Before I saw the StarBoard2, I had some very real doubts about whether Microbotics would be able to deliver these little trinkets. Now, I have no doubts that they can do it, with even more goodies to come.

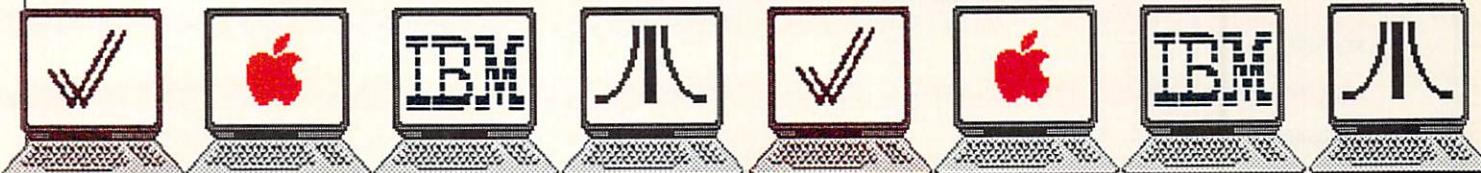
I expect a lot for my money, but the StarBoard2 surpassed all my expectations. Its features add up to make an Amiga memory expansion that the discriminating user will find irresistible.



ABOUT THE AUTHOR

Warren Block has been working with an assortment of mini and microcomputers since 1979. He studied math and photography in college, but quit to become a freelance writer and consultant. He now writes whenever he can find his computer underneath the tangle of program listings, compact discs, and miscellaneous stereo and computer equipment. He lives in Rapid City, South Dakota, near the foot of Mount Rushmore.

16/32-BIT COMPUTERS



A COMPARISON:

by Mark R. Brown, Technical Editor

A 16/32-bit computer is one that uses a 16-bit external data bus, but uses 32-bit registers internally. In simple terms, while 16/32-bit computers are not the most advanced personal computers on the market (true 32-bit computers have that distinction), they are the most powerful *reasonably-priced* micros.

The most commonly used 16/32-bit microprocessor chip is Motorola's 68000. It is used in all models of the Amiga, the Atari ST, and the less-expensive Apple Macintoshes. The newer Mac II, which we've included in the chart because so many people are interested in its color capabilities, uses a more advanced true 32-bit microprocessor, the 68020. The new IBM PS/2 series models incorporate microprocessors from Intel; the 80286 in the model 50 is actually a 16-bit computer chip, but it includes some extra features such as a MMU (memory management unit) which make it more powerful than straight 16-bit computers; the 80386 in the model 80, IBM's top-of-the-line in the Personal System II series, is a very powerful true 32-bit machine that we've included just to show you how much money you can spend if you want to. We haven't included the model 30, which uses the lowly 16-bit 8086 chip, or the Apple IIGS, which uses 8/16 technology. Nor have we included the elderly 128K Macintosh or the 512K "Fat Mac", which have been superceded by the newer Mac Plus and Mac SE. Atari's Mega ST is not listed because it hasn't shipped yet. Atari may ship it by the time you read this, but we'll wait and see. We have also not included machines like Compaq's 386 computer or the price-reduced Sun and Apollo workstations, because there is simply not the space to list them all, so we stopped with the "Big 4".

The notes do a pretty good job of explaining the peculiarities and particulars of each machine, but here's some additional INFO:

The Amiga 1000 is no longer being built, as near as we can tell. The \$1299 official list price is as close to fiction as you can get; the real street-retail price is closer to \$1000 with

monitor. The A2000 should be available by the time you read this. If not, don't blame us. All three Amiga models are very similar in function, with their major difference being internal technology and expandability.

The two cheaper Macs are quite similar to one another, but the SE has an internal expansion slot. The Mac II is much more powerful, and more expensive.

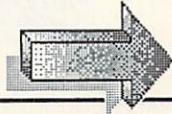
The IBM PS/2 line also includes models 25, 30, and 60, not listed because the 25 and 30 are underpowered compared to the rest of the line, and the 60 is essentially a 50 in a bigger box for more money.

The Atari STs are similar to each other, but the 1040 has twice the memory and the drive is built-in. Both are intended to be stand-alone, entry-level, unexpandable computers.

Some may argue with us about some of the features listed. For example, we list the Amiga's true highest "overscan" resolution, not the 640x400 that Commodore claims. We also claim the Amiga can display a maximum of 4096 colors at once rather than 32. Why not? There are very few restrictions on the use of HAM mode, many fewer than you encounter when trying to use 16 colors in the C64's 320x200 hires mode, and that's been the claimed resolution of that machine since day one! Rest assured that most of the data in our table is taken directly from the manufacturer's literature for the machine.

Needless to say, we think the Amiga stacks up pretty well.

Remember that most of these systems do not include a monitor, and one that will handle the high-resolution RGBA output of these machines will cost you an additional \$350-up. Some systems also have "hidden costs". We've added in the worst of these: the video board for the Mac II (\$648). We did *not* add in the cost of expansion memory, additional disk drives, hard drives, etc., even though many of these machines (including the Amiga) may not be able to achieve their full potential without the add-ons. Be sure to consider these things when you go to buy.



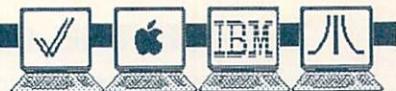


16/32-BIT COMPUTERS¹

FEATURE	COMMODORE AMIGA 1000	AMIGA 500	AMIGA 2000	IBM(10) PS/2 MODEL 50
List Price:(14)(18)	\$1295	\$ 699	\$1999	\$3595
HARDWARE				
Processor	68000	68000	68000	80286
Speed	7.14 MHz	7.14 MHz	7.14 MHz	10 MHz
Math chip?	no	no	no	no (socket)
RAM: Standard/Max	256K/8 Megs	512K/8 Megs	1 Meg/8 Megs	1 Meg/7 Megs
Number of Slots	0	0	7(15)	3
3.5" Drive Storage Capacity	880K	880K	880K	1.44 Megs
# Drives/Max. Internal	1	1	1/2	1/2
Hard Drive/Capacity	opt. external	opt. external	opt. internal	20 Megs
Mouse?	yes	yes	yes	optional
RS232C Serial Port?	yes	yes	yes	yes
Parallel Printer Port?	yes	yes	yes	yes
Joystick Port?	2	2	2	no
Expansion Buss?	yes	yes	yes	no
Additional Ports				Microchannel
Battery Clock?	no	optional	yes	yes
Keyboard: # Keys	89	94	94	101
: Detachable?	yes	no	yes	yes
: Function Keys?	10	10	10	12
: Numeric Keypad?	yes	yes	yes	yes
: Cursor Keypad?	no	yes	yes	yes
DISPLAY				
Max. Screen Resolution	672x444(3)	672x444(3)	672x444(3)	640x480
Color Palette	4096	4096	4096	262,144
Max. # Colors On-Screen	4096(4)	4096(4)	4096(4)	256 (320x200)
Hardware Blitter?	yes	yes	yes	no
RGB output?	yes	yes	yes	yes
Composite output?	yes	no	no	no
Monochrome output?	no	yes	yes	yes
SOUND				
# Voices	4 digital	4 digital	4 digital	beeper
Stereo?	yes	yes	yes	no
OPERATING SYSTEM				
Name	Intuition	Intuition	Intuition	BIOS(8)
ROM/disk	disk	ROM/disk	ROM/disk	ROM
Size	256K	256K	256K	128K
Multitasking?(16)	yes	yes	yes	no

**NOTES:

- (1) We're sorry, Apple fans, but the IIgs doesn't belong in this category. It is an 8/16-bit computer. Same goes for the new IBM PS/2 Model 30. It's an 8086-chip 16-bit machine, period. Even though the 80286 in the models 50 and 80 is also a straight 16-bit processor, it has a memory management unit and other features that bring its performance up, so we included them.
- (2) Atari's Mega ST is not yet available.
- (3) "Overscan" mode. We know Commodore only claims 640x400 maximum resolution. They are wrong.
- (4) In Hold-And-Modify mode (a perfectly legitimate and respectable display mode). Again, Commodore sells the Amiga short by claiming a maximum of only 32 simultaneous colors.
- (5) The STs connect only to their own special monitor (included in price).
- (6) 4-color mode. 320x200 in 16 colors. 640x400 max in monochrome mode with separate monochrome monitor.
- (7) 105-key keyboard available for \$100 more.
- (8) PC-DOS 3.3, which is required to run PC software, is optional at \$120. The much-heralded OS/2 multitasking operating system is not yet available, but will cost \$395 in a basic version, or \$795 for an enhanced version.



PS/2 MODEL 80	APPLE MACINTOSH PLUS	MACINTOSH SE	MAC II(12)(13)	ATARI 520ST	1040ST(2)
\$6995	\$2599	\$2898	\$4417	\$999 (color)	\$1099 (color)
80386	68000	68000	68020	68000	68000
16 MHz	7.8336 MHz	7.8336 MHz	15.6672 MHz	8 MHz	8 MHz
no (socket)	no	no	68881	no	no
1 Meg/16 Meg	1 Meg/4 Megs	1 Meg/4 Megs	1Meg/8Mega(11)	512K/512K	1 Meg/1 Meg
7(9)	0	1	6	0	0
1.44 Megs	800K d/s	800K	800K	720K	720K
1/2	1	1/2	1/2	1 external(17)	1
44 Megs	opt. external	opt. internal	opt. internal	HD port	HD port
optional	yes	yes	yes	yes	yes
yes	2	2	2	yes	yes
yes	yes	yes	yes	yes	yes
no	no	no	no	2	2
no	no	no	no	(cartridge)	(cartridge)
Microchannel	SCSI	SCSI	SCSI	MIDI in/out	MIDI in/out
yes	yes	yes	yes	no	no
101	78	81(7)	81(7)	94	94
yes	yes	yes	yes	no	no
12	none	none	none	10	10
yes	yes	yes	yes	yes	yes
yes	no	no	no	yes	yes
640x480	512x342	512x342	640x480	640x200(6)	640x200(6)
262,144	b&w	b&w	16 million	512	512
256 (320x200)	b&w	b&w	256	16	16
no	no	no	no	no	no
yes	no	no	yes	yes	yes
no	no	no	no	no	no
yes	no	no	yes	yes(5)	yes(5)
beeper	4 digital	4 digital	4 digital	3 synthesized	3 synthesized
no	no	no	yes	no	no

BIOS(8)	Finder	Finder	Finder	TOS/GEM	TOS/GEM
ROM	ROM	ROM	ROM	ROM	ROM
128K	128K	256K	256K	192K	192K
no	no	no	no	no	no

(9) 3 32-bit slots, 4 16-bit slots.
 (10) The only programs currently available are standard IBM/PC titles that do not take advantage of the PS/2 series' special features. Some titles are incompatible with PS/2.
 (11) Expandable up to 2 Gigabytes via the NuBus.
 (12) The price quoted includes the Mac II with an expanded color video card, since the color system is the one everyone is interested in. Monitor extra.
 (13) No software is yet available that takes advantage of the Mac II's special abilities.
 (14) Mac Plus, Mac SE, and both ST systems include monitors.
 (15) Up to 5 for Amiga, up to 4 for PC-compatibility. Also includes a coprocessor expansion slot and a video board slot.
 (16) Apple, IBM, and Atari are all promising "add-on" multitasking operating systems, but none is shipping yet, and all will cost extra.
 (17) The 520ST drive is separate. The 360K drive lists for \$199, the 720K for \$299. The cost of the 720K drive has been included in the system price.
 (18) Monitor and other peripherals not included in price unless bundled with system. See notes.



TOP-OF-THE-LINE SYSTEMS:

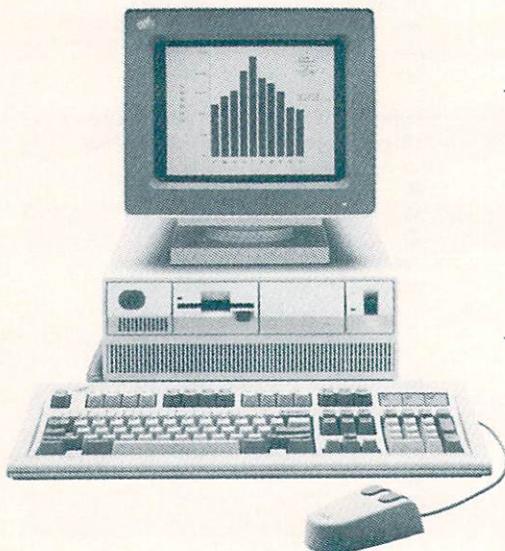
Each system is similarly equipped:
RGB monitor, 1 meg of RAM, and 20 Meg hard drive.



AMIGA 2000

A2000	\$1999
Bridge PC compatibility card	\$ 599
PC 5.25" drive	\$ 139
20 Meg PC Hardcard	\$ 449
Amiga Color Monitor	\$ 350
TOTAL COST:	\$3536

CAPABILITY: Multitasking 1 Meg 7.14 MHz 68000 Amiga system with hardware graphics & sound and 1 880K floppy drive, plus a 512K 4.88 MHz 8088 PC/XT-compatible with 1 360K drive, plus shared 20 Meg hard drive. Upgradable to PC/AT, 68020, etc.



IBM PS/2 MODEL 50*

Model 50	\$3595
PC-DOS 3.3	\$ 120
Mouse	\$ 95
IBM Color Monitor	\$ 595

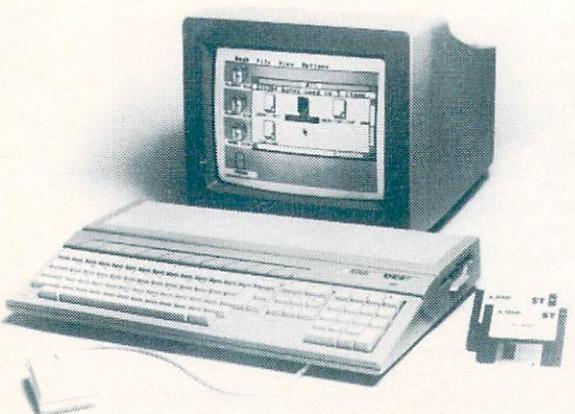
TOTAL COST: **\$4405**

CAPABILITY: Single-task 1 Meg 10 MHz 80286 PC-DOS system (mostly PC/AT-compatible) with 1 1.44 Meg floppy drive and 20 Meg hard drive. Upgradable to OS/2 multitasking operating system when available.

APPLE MACINTOSH II*

Mac II w/expanded video board	\$4417
20 Meg hard drive	\$ 999
Mac Color Monitor	\$ 999
TOTAL COST:	\$6415

CAPABILITY: Single-task 1 Meg 15.7 MHz 68020 Macintosh system with 68881 math coprocessor, 1 800K floppy drive and 20 Meg hard drive. Upgradable to MS/DOS, multitasking, etc., when available.



ATARI 1040ST

1040ST w/color mon.	\$1099
20 Meg hard drive	\$ 799
TOTAL COST:	\$1898

CAPABILITY: Single-task 1 Meg 8 MHz 68000 ST system with 1 720K floppy drive and a 20 Meg hard drive. [This computer could better be compared to the Amiga 500 with its internal memory expander installed, which is closer to the 1040ST's price. But if and until the Mega ST series ships, this is the top of Atari's line.] Unexpandable.

[All prices are list.]

* Distribution of IBM and Mac computers is strictly controlled by the manufacturers to prevent heavy discounting. Expect to pay very close to retail list price for these machines.





B.E.S.T. ACCOUNTING

by Peggy Herrington

B.E.S.T. BUSINESS

MANAGEMENT \$395.00

B.E.S.T., Inc.

P.O. Box 230519

Tigard, Oregon 97223

1-800-368-BEST

Extremely easy-to-use double-entry accounting system, V2.0 has general ledger (available separately @ \$79.95), A/P, A/R, inventory and services modules, all with ultra-flexible report printing. No built-in payroll or bank reconciliation. Mouse-oriented, will multitask with hard drive and expansion RAM but all 60-column display only. No pulldown menus or key shortcuts. Requires 512K with 1 or 2 floppies, optional hard drive.

-PH

INFO-rated



Its seven modules are listed in colorful squares stacked vertically in the center of the main screen: (1) General Ledger, (2) Accounts Receivable, (3) Accounts Payable, (4) Inventory, (5) Services, (6) Business Functions and (7) Setup. There is also an Exit box, with no second chance if you select it. When you move the pointer to one of these boxes and click the mouse button, you are presented with a similar menu for that particular module, again with menu items in colorful squares down the center of the screen. The second menu is usually followed by an ASCII (text and numbers) input screen. Switching between these areas is very fast.

B.E.S.T. is super-simple to operate and the menu bar across the top always shows what area you're in. B.E.S.T. uses no pulldown menus or shortcut key combinations, and I was at first dismayed, figuring I'd have to wade through screens of menus when I moved from area to area. But after using the program for awhile, I found this wasn't the case; I can't recall being presented with more than two or three menus at any given time.

THE GOODS

B.E.S.T.'s strong points are its flexibility and clarity; you don't need an accounting background to manage it successfully. I talked with a number of small companies using it -- everything from a psychologist to a manufacturer -- and without exception, each raved about how easy it is to use; secretaries bragged about how good it makes them look!

APPLY FINANCE CHARGES

Date 09/02/87

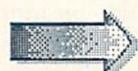
Finance charges for open-invoice accounts will be calculated based on invoice terms. Finance charges for balance-forward accounts will be calculated using one of the methods below:

1. Fixed amount for past due accounts _____
2. Percent of current account balance _____ %
3. Percent of average daily balance 17.500 %
From 09/01/87 To 09/01/87

Update G/L (Y/N) A/R (DR) E/C (CR)

OK

CANCEL



Day-to-day business activities are entered in the *Business Functions* module. This is where you do your banking, printing checks (which can be disbursed among several accounts) and receiving payments (recording bank deposits). You can enter and print customer invoices, either as accounts receivable or retail point of sale transactions, and produce detailed purchase orders, reserving inventory for future orders if you wish. Sales and purchase returns are also entered here, along with accounts payable as you receive bills from your suppliers.

Before you begin making these daily entries you must organize your books in the *General Ledger* and *Setup* Modules. A simple chart of accounts comes pre-setup, numbered 1000 for assets, 2000 for liabilities, 3000 for capital, 4000 for income and 5000 for expenses. Onscreen account balances for the current and for two previous years are available. You can add to or delete these accounts, or toss them all out and use your own system. The *General Ledger* module (which is also available as a free-standing product for \$79.95) is where you enter journal transactions. Closing monthly activities (often a real trial for the inexperienced) is no more complicated than clicking the mouse pointer on the Close Month box. Also provided are standard formats for printed reports: Balance sheet, income and expenses along with individual journals and audit trails. You're free to use these or create your own. The user interface is so straight-forward it's surprisingly easy.

The *Accounts Receivable* module helps you produce a variety of sales reports and prepare monthly statements for your customers, as well as mailing labels if you need them. Before you print statements, however, you'll want to make some master file entries for any discounts you offer for prompt payment, fees you charge for late payment, or finance charges (if any), which can be computed either by percentage or flat rate. Again, by simply clicking on an onscreen box, accounts are aged automatically by date (current, 30, 60 or 90+ days) and these fees are figured into individual balances which, along with text messages, are printed on the statements, all of which are coordinated by number to these master entries. This goes for sales taxes, too, and you determine which applies to individual accounts by entering the corresponding numbers in the *Add New Customers* or *Edit Existing Customers* screens. Sales reports are equally as diverse and customers can be ranked by amount of activity (dollar volume), or sorted on name or account

EDIT CUSTOMERS

Customer # 23	Name TUNA
Contact FILLET	Addr RR#3
Phone # 555-8862	SEAFARER LANE
	ATLANTIS, CA 99998
Balance 8.00	On Order 57.00
Current 53864.00	Limit 750000.00
1-30 47368.50	Sales MTD 29.95
31-60 2371.40	QTD 57.00
61-90 4552.10	YTD 4783.97
91+ 178.49	P/C YTD 3585.28
Min Pay x 25.0 Round Up To _____ Min Pay _____	
Account Type B Taxable Y Terms _ G/L Acct # _	
<input type="button" value="←→"/> <input type="button" value="FIND"/> <input type="button" value="SEARCH"/> <input type="button" value="UNDO"/> <input type="button" value="DELETE"/> <input type="button" value="DONE"/>	

number by month, quarter or year-to-date. Payables can be aged in the *Accounts Payable* module, and you can produce similarly ranked reports on suppliers, though payables are entered originally in the *Business Functions* module described previously.

TANGIBLE OR INTANGIBLE

The *Inventory* and *Service* modules make using B.E.S.T. practical whether you offer tangible products, services, or both. You can set up product and service groups and automatically produce monthly, quarterly, or year-to-date inventory reports on price-cost comparisons, shortages, availability, valuation and average costs. Custom reporting is also available in both modules.

Ways of doing things are standardized throughout the modules, so if you know one you know them all. To add or edit accounts you're presented with an ASCII screen will full-screen cursor-key editing. Any time you enter anything and exit that screen you are warned if you forgot to save your changes to disk, and you're given a chance to do so. Screens have colorful boxes (gadgets) you click the mouse pointer on to SCROLL through the accounts or products, etc., SEARCH through them alphabetically or FIND one by number, UNDO what you just entered (which would be handy to have implemented on other screens as well), DELETE a record, or indicate you're DONE.

THE DOCS

I was able to use B.E.S.T. without even opening its beautiful three-ring instruction manual -- but it would have been my loss had I not done so eventually. It's full of screen shots

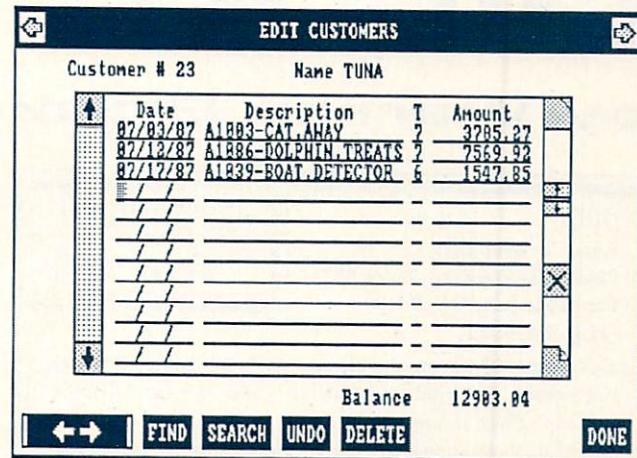
and clearly written instructions. Many of the businessfolks I interviewed who were using it sans a degree in accounting claimed they *still* didn't know a debit from a credit. They said that when they had encountered problems that they couldn't answer from the manual, calling B.E.S.T.'s toll-free customer support line brought immediate aid. I almost had to call myself. The manual is superior (among the best I've ever seen) but it is arranged in menu order and doesn't have an index. The screen colors are changeable from within the program, but I couldn't figure out how to configure my printer through Preferences (which is provided on the program disk). I could move behind the program to the startup screen but that didn't get me anywhere because B.E.S.T. boots automatically and doesn't load Workbench or leave a CLI open while it's running. I was just about to pick up the phone when I discovered that exiting from the main menu kills the program and frees the CLI. Typing Preferences was all I had to do.

THE NOT-SO GOODS

Getting to Preferences wouldn't have been a problem if B.E.S.T. were set up for multitasking, but it isn't. There are valid reasons for this, not the least of which is that there isn't enough room on an 880K floppy disk for the B.E.S.T. program and all the Amiga system software necessary to get other programs running. If you have expansion RAM and a hard disk drive however, you can multitask provided you're willing to live with its 60-character-wide screen formatting in your other programs, too. (By the way, disk access with a hard drive is on the order of five times faster than from floppy drives.)

Easy as it is to use, I'd like to see online help screens implemented via the Help key -- an underused feature of the Amiga if ever there was one. B.E.S.T.'s reporting abilities are nothing less than fabulous, and my only complaint is that reports aren't displayed on the screen for previewing before they're printed (although there is a Quick Balance Check option for the General Ledger). A variety of preprinted forms (statement, invoices, etc.) are available from B.E.S.T. by special order.

The missing payroll module could be a hassle if you have employees, though you can, of course, compute wages and deductions manually (or with another program) and print checks from B.E.S.T., then set up accounts for employees, taxes, FICA, etc. But you'd better know what you're about if you do this, because the manual won't help you. Another



shortcoming is checking account management. It's possible (although neither easy nor documented) to operate multiple checking accounts, but you're on your own when it comes to bank reconciliations and journal entries for bank charges and adjustments.

IBM-PC VERSION

Despite the absence of a payroll module and checking account management, I'd still recommend B.E.S.T. for smaller businesses, especially considering its splendid ease-of-use. Used as it is intended, you don't need to know much about debits and credits, and what you do need to know is right there in the manual. Interestingly enough, this Amiga-designed program has been ported to the IBM-PC under the icon-oriented GEM operating system. That version has a much better chance of making it into college accounting classes like the one I took, and I'd love to be there when those accountants get a look at it. B.E.S.T. is as different from the accounting programs I studied as anything imaginable, and in this instance, different is definitely better.



ABOUT THE AUTHOR:

Peggy Herrington is a well-known freelance writer in both the Commodore computing and music fields. She got her bachelor's degree ("in music history, English, computer science, and a smattering of other things", according to Peg) from the University of New Mexico, and works out of her home MIDI studio in Albuquerque, surrounded by Commodore computers, synthesizers, kids, and an occasional lizard.



DIGA!

by Warren Block

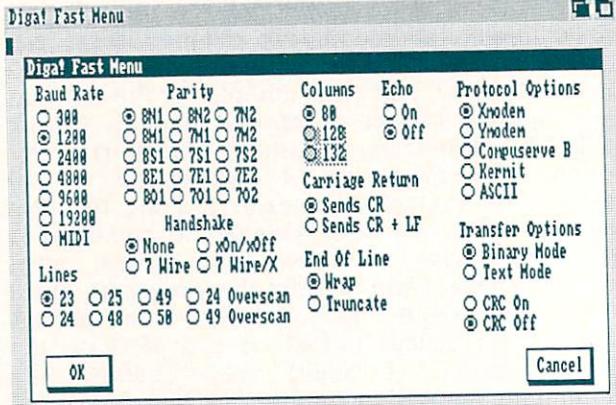
DIGA! \$79.95
Aegis Development
2210 Wilshire Blvd. Suite 277
Santa Monica, CA 90403
(213) 392-9972

INFO-rated



Full-featured terminal program with many file-transfer protocols, terminal emulations and screen display options. Easy operation is supplemented by a sensible user interface, powerful script programming language, and phone number database. Has some problems multitasking, and omits a split-screen mode for online conferencing. Good documentation.

-WB



ANOTHER TERMINAL PROGRAM?

There are quite a few public domain Amiga terminal programs, and several commercial ones, but they all seem to lack one thing or another; a communications protocol may be missing, or there may be no script language, or no way to program the function keys. Diga! from Aegis Development is an attempt to locate all the most desirable features from these into one heavy-duty program.

THE PROGRAM

Like other Aegis programs, Diga!'s user interface is consistent and understandable. The most obvious way of doing things is usually the right one, making references to the manual largely unnecessary. Diga!'s file requesters show how the Amiga has matured as a system; they now include buttons for RAM: and DH0: (hard disk 0). The no-wait style is used here--if the filename you want shows up, you may click on it at any time without having to wait for the program to get the rest of the directory. Mouseophobes will like the keyboard shortcuts available for almost all the commands.

FEATURES

Diga! handles most of the major download protocols, including XModem, YModem, Compuserve B, and Kermit. A CRC (Cyclic Redundancy Check) option for the X- and YModem protocols is available to make file transfers more reliable. Subscribers to the PeopleLink network will notice that the popular WXModem protocol is missing--Aegis has plans

to add this and other protocols later.

Several terminal emulations are available, like Digital Equipment's VT52 and VT100; ANSI-compatible; and the Tektronix 4010 graphics terminal. In addition, an emulation that uses the Amiga's voice synthesis routines to speak incoming text is included. The program is open-ended in this area--separate emulations may be programmed and loaded off disk when needed, something like the Amiga's printer drivers. The manual doesn't give any information about this, but Aegis provides an address where information about programming custom emulations may be obtained.

Diga! can operate at standard speeds up to 19,200 baud, or even the speed of 31,500 baud used by digital music keyboards. The MIDI (Musical Instrument Digital Interface) speed is uncommon, but would be good for transferring data between two closely-situated computers. For an alternative method of facilitating data transfers, an option called Doubletalk is available. Using this protocol, two users can simultaneously transfer files and converse with each other using their keyboards.

SCREEN CONTROLS

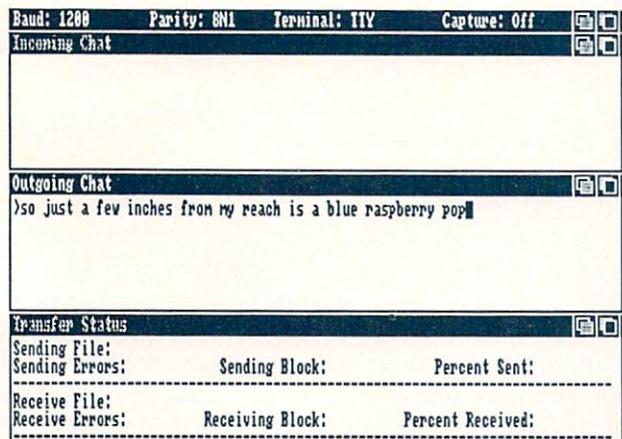
Rather than using the Workbench, Diga! opens its own four-color screen. All four of the colors can be adjusted by the user from a requester that uses the standard slider gadgets.

The amount of text displayed is also highly adjustable. Available choices include 80, 128, or 132 columns with 23, 24, or 25 lines (in non-interlaced mode) or 48, 49, or 50 lines on an interlaced screen. The 128 and 132 column noninterlaced modes are surprisingly clear and readable. When interlace mode is used, the

default screen colors are green characters on a black background. This combination of colors helps to cut down the flicker associated with interlace mode. In fact, the biggest problem with using a 48-line or longer display is not the flicker, but characters that are extremely small, almost unreadably so. There is an option to use fonts other than those included on the Diga! disk, so it is possible to use one that you find more legible.

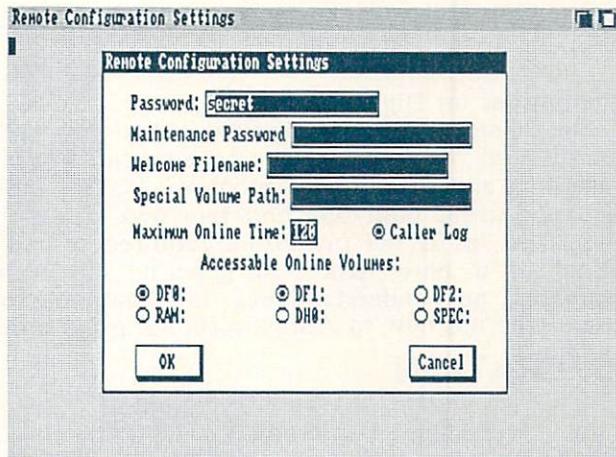
As if all this weren't enough versatility, the program allows you to adjust overscan, conceivably adding extra rows or columns to the screen display.

The Phonebook command calls up a sort of miniature database. With each phone number, room is provided for a small amount of descriptive text, a default configuration file, and a default script. Entries are kept in alphabetical order, and loaded as needed from disk. It is also possible to print out the current entry, or the entire database. Between all the commands and information, it can take some time to fully understand the operation of the Phonebook, but it is time well spent.



MACROS

Users fond of programmable macro keys will like Diga!; not only the function keys, but all the combinations of the function keys with the Shift, Alt, Ctrl, and Left-Amiga keys may be programmed, resulting in fifty macro keys. Even that isn't the end--definitions are saved with each configuration file, making it possible to have fifty different macro definitions for every phone number.



SCRIPTS

Script languages make it possible to program the operation of a terminal program, and the one built into Diga! makes this a relatively simple task. Most of the program's options are accessible from scripts, although I couldn't find a script command to copy a filled capture buffer from RAM: to a disk. You can save incoming text directly to disk, although it is slower than saving to memory.

Novices should be warned that the script language is a full-fledged programming language, and creating useful scripts can take quite a bit of effort. A well-written script can reduce on-line time dramatically, though, resulting in savings in connect fees and phone bills.

CONFIGURATION FILES

Since it would be a hassle to have to set all the options every time the program is run, you can save Diga!'s configuration to a file. Everything that is adjustable is saved, including screen colors, the number of lines and columns on the screen, and macro key definitions. Besides having a default configuration file that is loaded when the program is executed, a separate, customized one can be set for each number in the Phonebook. Before that particular number is dialed, its configuration is loaded and used.

DOCUMENTATION

Diga!'s softcover manual is another of one of the typeset, highly readable books that Aegis products have always had. This one has 94 pages, laid out in a clear and readable fashion. The standards have slipped a bit from the earlier ones, though--there is no index! Even so, there is a reference section that details all

the options on Diga!'s menu bar.

The "Getting Started" section is laid out very simply, so beginners will have little trouble installing and running the program. Making disk backups using both one and two disk drives is described, as is the procedure required to copy Diga! to a hard disk. In general, the book provides an understandable introduction for users who are new to Amiga terminal programs.

OPERATION

In use, Diga! works very smoothly. The Phonebook makes dialing separate communications services and BBS systems simple by eliminating the need to remember numbers and information relevant to that system, and the scripts and configuration files can greatly simplify the operation of different system.

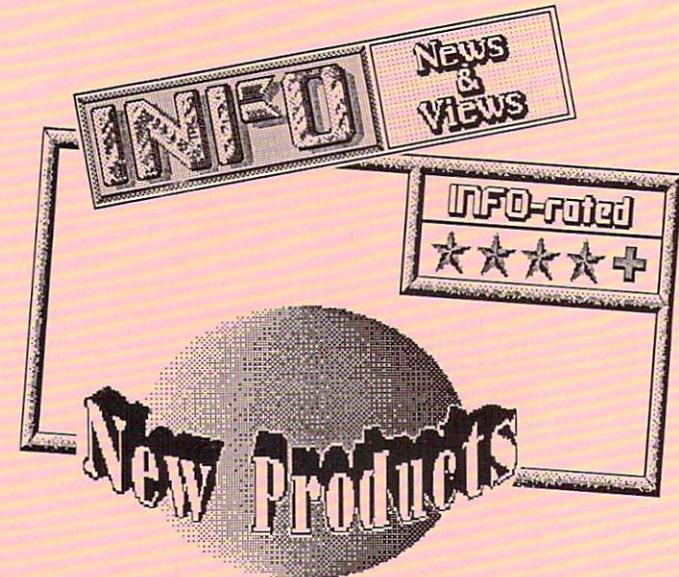
But Diga! does have a problem. It doesn't seem to be fond of multitasking with some other programs, occasionally crashing the system. This problem is not common, though, and never caused any problems while actually on-line.

CONCLUSION

Adding all this together results in a well-designed telecommunications program with only minor drawbacks. Diga! is a good value not only for professionals, but for telecomputing novices. The script language allows you to create programs customized for a specific application. Everything works well together, the only problem being an occasional reluctance to multitask.

All in all, Diga! represents an excellent value for anyone wanting to use an Amiga for telecommunications.

Editor's Note: Warren gave Diga! a good look, but he obviously does not chat in online network conferences. Though it has a chat mode for its own transfer sequence with another Amiga using Diga!, it amazingly does not include a split-screen chat mode for network conferencing, which results in garbled text. It's difficult to understand why such a basic telecommunications feature (included in many free public domain terminal programs) was omitted from this otherwise fine terminal program. Warren rated Diga! four-stars, but we've dropped a half a star for the omission of a split-screen mode. -Mark



ARE YOUR PRODUCTS IN INFO?

If your company produces software or hardware for the Commodore 64, C128, or Amiga systems, your products should be in INFO! INFO is highly regarded as the "Consumer Reports of the Commodore marketplace", and people turn to INFO for advice when they are ready to buy. We let our readers know about your products in three different ways:

1. Through product announcements (with photos) in our New Products section
2. Through full-fledged INFO product reviews, with star ratings
3. Through listings in our regular Product Roundup issues where your product will be listed with a short description and ordering information alongside over 2000 Commodore-related products (the most comprehensive product listing in the industry)! To tell INFO readers about your products, simply send products and product information to:

INFO Publications
123 N. Linn St.
Suite 2A
Iowa City, IA 52240

P.S. Carol has asked me to remind you of a fourth way to let INFO readers know about your product:

ADVERTISING!!

Call her at (319)338-3620 for details.

PAUL MONTGOMERY INTERVIEW

...continued from page 28

been unavailable for anything less than \$50,000 on a professional piece of equipment. I've seen prototypes of products that will do that for under \$1000 with the Amiga. This will effectively give the power of the network television equipment to the home user. Now, at first these products will be very expensive because the developers know there is a high end market, but it's only a matter of time before they come down to a low end price where the average 500 or 1000 user can afford to use them.

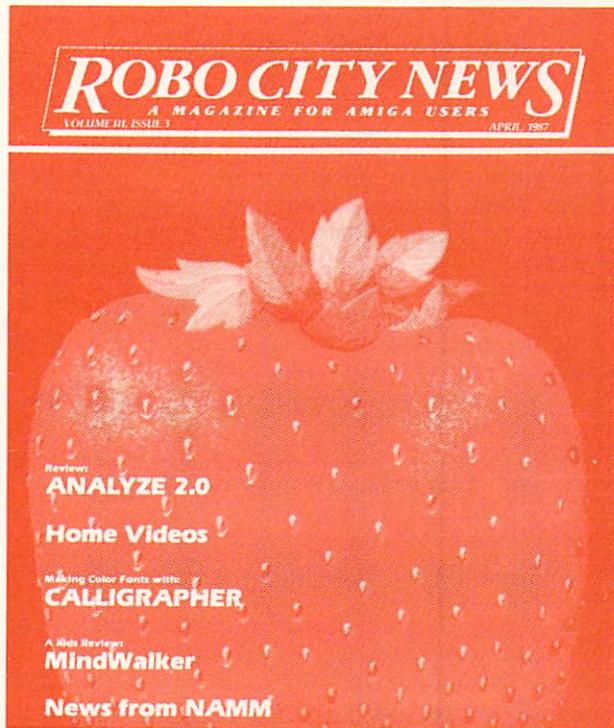
INFO: *Home movies may never be the same.*

MONTGOMERY: Absolutely right! There will be a new level of sophistication not at all previously available. Things that videophiles like myself only dreamed of a year ago, within another year will be absolute reality. I never expected the technology to come down to us so fast! I think of what we're doing now at NewTek as a real complement to the Amiga.

There's a lot of talk right now in the computer industry about CDI and DVI. [CDI stands for Compact Disk Interactive, and DVI is Digital Video Interactive. -Ed.] A lot of people in the industry are saying, "Well, computers like the Amiga and the new Macintosh II are going to be obsolete for the most part when compact disks and these new systems hit the home market." That's absolutely not true. Anyone out there who reads that should know that the Amiga is really capable of doing almost everything that one of these CDI or DVI systems can do. It is, in fact, possible to simulate a lot of the things those products can do on the current home Amiga.

I know developers, including NewTek, who have decided to take a real stand on that and come out with products that people at this point can't even imagine can be done on a home computer. But by using some of the same technology developed by RCA, GE, SONY and Phillips, who are the big compact disk people, on home Amigas with regular Amiga disks, we've started producing really incredible products. I can't be more specific than that right now, but I'd say within the next twelve months people will realize what I'm talking about and will be very happy that they supported the Amiga as well as they did.

INFO: *If you will allow me to switch subjects for a moment... Aside from being a videophile, you obviously do a bit of writing. How did you get to be the editor of Robo City News?*



MONTGOMERY: Actually, it's done by committee. I'm only one of three. Back in the beginning of F.A.U.G. Kayvan had actually started a small four page newsletter, done on a dot matrix printer, with no color. A nice small newsletter. After the first meeting, Tim, Kayvan and I got together and decided that we could make this the premier Amiga newsletter for the country since Kayvan owned his own printshop, and the three of us together had probably more contacts than the other Amiga magazines combined. I mean, we could write it and have the thing typeset and out on the street in two days. We decided to do something absolutely current and on the cutting edge. Our gossip column has been 85% correct. We break rumors and print information before it hits anywhere else, and in some cases it never gets anywhere else.

Although we've now added color and a much more professional look, it is still basically done by three users who love the Amiga and who wanted to do something for other users who would like to know this information. I'd say the newsletter is the thing F.A.U.G. is most noted for. We have over 2000 subscribers reading it each month.

INFO: *How did you get from there to Electronic Arts and Deluxe News?*

MONTGOMERY: That was really the start of my career in computers. Up to the time I started at Electronic Arts I was juggling a fairly successful real estate appraisal firm, F.A.U.G., and also acting as a contact and resource person for other Amiga groups. I had been a beta tester



for Deluxe Video Construction Set, done some videos which really impressed Trip Hawkins (the founder of Electronic Arts), and had even gone to lunch with him (which I thought nothing of at the time... just two Amigaphiles getting together).

One evening when I was at my home in San Jose, I got a call from Stan Roach, the marketing manager at Electronic Arts. He asked me if I'd like to go to a video convention with Electronic Arts, and I said I could probably rearrange my schedule. Then he paused and said, "Would you like a job at Electronic Arts?" He explained that they couldn't pay me as much as I was currently making, that the hours would be longer, and that I'd have to commute 40 miles a day. I thought for a few seconds about how mad my fiancee would be, and how my father, who helped me start my appraisal business, would be certain I had lost my mind, and then I said, "Sure!"

Stan went on to explain that, among other things, they wanted me to do a small black and white newsletter to be sent to the registered owners of Amiga software to let them know about upgrades, and interesting little stories about our products. Nothing too ambitious. So I set about designing a full color, 16 page magazine that even covered competitors' products because I wanted it to be something people would get in the mail and be very impressed with. I wanted them to feel good about Electronic Arts because they were not just talking about their own products, but were giving Amiga users really useful information. Electronic Arts really had no idea of what they would be getting. I worked very hard for a few months on the first issue and got a lot of help from Kayvan, who helped with the printing, Richard Antaki who was my designer and who worked very hard on making Deluxe News look the way it did, and Steve Peterson who helped with the writing. And then the first issue came out and it was a big hit, was very popular with the company and the users, did wonders for my career, and helped Electronic Arts look even better than it had before.

INFO: How did you move from there to NewTek?

MONTGOMERY: I did two issues of Deluxe News. In the first issue I had a big article on Tim Jenison's (the founder of NewTek) DigiView, which was a real favorite around Electronic Arts because it worked so well with Deluxe Paint and Deluxe Video. I got to know Tim through this story and in the course of our conversations he confided that the weakest area

his company had was in marketing and public relations. He was quite the hacker-genius and was really not comfortable being the marketing guy. I would go home at night thinking about the products he had shown me or the things we had talked about. He finally made me an offer to come work for his company. The plan was that I would commute back and forth between California and Kansas every two weeks. It meant a substantial boost in pay, and more than that, it meant the chance of a lifetime; to be one of the ground-floor, key executives in a small but potentially extremely successful company. As much as I loved Electronic Arts, I just had to take the offer.

INFO: Switching subjects once again, what do you think of the new 500s and 2000s? What do you think of Commodore's decision to dump the 1000s?

MONTGOMERY: Someone once told me that what Commodore does best is move boxes out the door. That's how the 64 has survived. Commodore hasn't had to do too much advertising, they just shipped boxes to stores and the users and software publishers do the rest. The Amiga 500 is very similar to the 64 in that respect. All Commodore will have to do is let people know it's there with some advertising, and let the software developers, who really sold the machine in the first place, continue to do the products to sell the Amiga 500, and Commodore moves boxes out the door again.

The 2000 answers a lot of the problems we had with the 1000 in terms of IBM compatibility, so that those business users who laugh at anything but IBM compatibility but like the Amiga's graphics will now have a machine that they can buy and justify to the company bosses.

Dumping the 1000? I think it's really for the best. I have a 1000 and realize that someday it may be somewhat obsolete, but it's really for the best that the Amiga continues to grow. I feel the Amiga is really going to make it. It's really going to happen. Of course, the 500 and 2000 are not really the product of the design team at Los Gatos, but their dream of the Amiga becoming a popular home computer is finally going to be realized.

INFO: If someone turned Commodore over to you, would you do it any differently than they've been doing it?

MONTGOMERY: Oh sure. Every programmer and marketing person I know would like to run

Commodore differently. But Commodore is a big company and they can't make snap decisions like we do. We can say, "Gee, I'd like to wash the car today". Commodore has to say, "Gee, I think I'll bring up in committee today that I'd like to have the car washed". It might be a month before it's washed, but that's typical of all large companies. So to play Monday morning quarterback and try to make decisions for Commodore really doesn't apply. We should be grateful the Amiga's even here and that they have continued to support it.

On the other hand I know, at first, I felt personally responsible for the success of the Amiga. I would go into computer stores where I didn't feel they knew what they were doing, and sell Amigas for them. I know a lot of other Amiga owners did this too, kind of like trying to save a little piece of the world themselves. I think I would like to see users take this on themselves. Sell an Amiga to someone, and do part of the job Commodore should have done in the first place.

INFO: Do you think the administrative problems Commodore has had recently will have any effect on the future of the Amiga?

MONTGOMERY: The new management that I have had a chance to meet at Comdex and similar places really impressed me. The best way I have to explain that is a little story. We were all showing our products at the Commodore booth at Comdex. The booth was a little messy and some of us were late and, generally, we weren't as organized as some of us would have liked. The new head of all sales for Commodore, a guy named Rich MacIntire, came up and took us all aside at the end of the day and said, "Thanks for coming guys, but let me tell you... the booth was a mess, a lot of you were late, and it looked absolutely disorganized. I'm not going to have this kind of thing happening." He told us all off, even the ones that were on time, so we all went home offended and upset, feeling like, "Oh my God! The guy's real mean and he doesn't respect what we've done."

But then I started to feel like, "This is really a no-B.S. kind of guy. He's real tough and he wants to see this machine succeed at any cost." It's the first time I ever saw someone from Commodore main management who was willing to take a chance, and be tough about it. I think that's what Jack Tramiel would have done if he were still at Commodore, and he would probably have succeeded with the Amiga, so I felt really great.

I think the new management is doing a lot of

the right things. We will see a new television campaign this Fall, which I've seen previewed, and it's very impressive. The Amiga 500 certainly is a step in the right direction and so are a few other changes they're working on. I would say thumbs up at this point. I'm guardedly optimistic about what's going to happen with Commodore in the future.

INFO: In closing, do any stories come to mind that you would especially like to share with us?

MONTGOMERY: Yes ... one or two especially come to mind. I could tell you about the colossal blunders Commodore made when the producers of *Star Trek IV* came to them and asked to use Amigas in their movie. How one of their minor marketing functionaries carried out Commodore's decision to charge the full developers' cost, and how Commodore actually returned one of their checks because it wasn't for the full amount.* That sort of thing -- combined with the lack of support -- upset the movie company so much that if you look in the movie you will see Macintoshes with Apple GS boards instead of Amigas. Or, I could tell you about the time I made a trip to Atari posing as a developer of a fictitious product in order to talk with Leonard Tramiel.

INFO: Let's not make everyone mad at Commodore. Would you tell us about your trip to Atari?

MONTGOMERY: OK. This dates back to the height of the Amiga Wars, when every time you picked up a computer magazine you read, "Amiga is about to go out of business...", "Atari sold 50,000 Ataris to every Amiga sold..." We would pick up local papers and read interviews with the Tramiels where they would say things like, "The Amiga is really worthless because it steals cycles from the microprocessor in certain resolution modes," and other somewhat misleading information.

I took it upon myself to plot a strike against enemy territory. So I got hold of a pretty well-known Amiga developer (who shall remain nameless), and called Leonard Tramiel. I said, "Hello, Leonard, my name is Paul Montgomery and I'm marketing director for XYZ Corp. (not a real company). My companion here has just developed a product which uses Time Domain Dithering (no such thing) to display images in thousands of colors on an ST screen (a baldfaced lie). Although the Atari only has 512 colors in its palette, we've figured a way around that." As I described the product, my friend was feeding

* Commodore says they did offer a free system to Paramount, but were passed by in favor of the Macintosh.

me technical jargon, so I'd at least sound legitimate. I compared it to the Amiga hold-and-modify mode, at which point Tramiel said, "There is no such thing as 'hold and modify mode' to hold 4000+ colors!" I just sorta sat there biting my lips.

Tramiel invited us to come and discuss our product, so my developer friend and I put on nice suits and went on down to Atari. Once we were talking to Tramiel, we told him we had been working on the Amiga and thought it was a good computer. He interrupted us at that point and said, "I guess beauty is pretty much in the eye of the beholder on that one!" I bit my lip again. We just went on to describe our product to him. I started to explain hold and modify to him, because I felt the guy was completely clueless, but he interrupted and explained the process in perfect detail to me. This is the same process he had denied earlier even existed! This sort of threw me and I knew I was in for a rollercoaster ride.

My first goal in all this was to have some fun with the guy, but my second goal was to find out where he really stood on the Amiga. In the process of discussing product development for the Atari, I would say things like, "Well, I think the Amiga and the Atari are both good machines", and he would respond with something like "Bull****!" and start pounding his fist on the table. "The Amiga is not even a GOOD computer, the Atari is a GREAT computer!, The Atari is really the big computer and the Amiga is an imitation", and on and on. There he was, yelling at us, thinking we were these peaceful Atari developers coming to talk to him, but trying to convince us that the Amiga was a worthless computer. In fact, he did such a good job during our hour and a half meeting, that I started to wonder if the Amiga would even boot up. It got so bad I had to hold my fist behind my back. It was like hearing your parents attacked.

We'd occasionally try to box him into a corner, but he did that pretty well on his own. My favorite thing he said was this: "Let me say this, Paul: The Amiga owns the video market. We don't want it...they can have it! It's the best video computer on the market and if that's where they want to make their mark they can have it!" I said that there were a lot of people out there who wanted a video computer. Rather than answer that, he said something about people being unwilling to pay as much as an Amiga cost, so I told him that when you added up the street costs of the components, the Atari and the Amiga cost just about the same. Then he got really upset and started adding up the cost of the individual pieces himself!

He started with the cost of the machine and two single-sided drives, and we had to remind him that the Amiga uses double sided drives, so he made that adjustment in price and was up to about \$850. Then he tried to add in the cost of a monochrome monitor, so we had to remind him that the Amiga had a color display. He made that correction and suddenly realized that he had just gone over the \$1200 I had quoted as the price of an Amiga. Instead of agreeing with me he said, "Let me tell you guys some things about disk drives that I bet you don't know..." and went off for 15 minutes about drives and the cost of drives and completely changed the subject.

He finished by telling us that no major software developer was supporting the Amiga. This was right before I went to work for Electronic Arts so I had to ask about them. Tramiel's response was to dismiss Electronic Arts completely. He said that they had no idea what they were doing and generally implied that Electronic Arts didn't count.

On our way out he stopped to show us the new Atari Blitter, an animation version of the Atari ST. My technician friend looked down at the open boards of the machine, saw the Atari board, and asked, "Hey! What are these ten other chips over here?" Tramiel sorta spluttered and said, "Oh those are just, you know, chips... nothing really." My friend figured out it was an entirely new computer... it wasn't an ST at all. The machine we saw never materialized, and there is still no Blitter ST on the market.

Tramiel patted us on the back as we were leaving, said he hoped we'd be back soon with more ideas for Atari, and we rushed off to tell everyone at the F.A.U.G. meeting that night about our visit.

INFO: Did Tramiel ever find who you were?

MONTGOMERY: Not unless he reads this article. But that's OK. I like to live dangerously.



ABOUT THE AUTHOR

Tokyo-born Mindy Skelton (who describes herself as "a normal All-American girl") has a degree in Philosophy from Roanoke College. Her day job involves selling Amiga computers, and she runs a desktop publishing business on the side. She lives somewhere in Pennsylvania with an Apple Macintosh, a Tandy laptop, and three Commodore computers.

New Products

COMING ATTRACTIONS

By the time Christmas rolls around, you'll be seeing a lot of new games for Commodore computers. Many of them are previewed in this super games issue. Many more have been announced for release by the end of the year. Here are the ones we know about:

COMMODORE 64

ACCOLADE: Test Drive, Apollo 18, Mini-Putt
 AVALON H.: Dark Horse, Macbeth, Wooden
 Ships & Iron Men
 CAPCOM: Gunsmoke Side Arms, Speed
 Rumbler, Trojan
 COSMI: Chernobyl, Grand Slam Baseball,
 Inside Trader, Top Fuel Challenger
 DATA EAST: Breakthru
 DATASOFT: Dark Lord, Force 7, Tomahawk,
 Bismarck, Tobruk, Old Scores,
 Swords & Sorcery
 EA: Rommel at Tobruk
 EPYX: Street Sports Basketball, Boulder
 Dash Construction Kit, Rad Warrior,
 Spy vs. Spy 3, Sub Battle Simulator
 FIREBIRD: Golden Path, Cholo, Druid I,
 Heartland, Jewels of Darkness, Revs
 Plus, Silicon Dreams, Hyperball,
 Kinetic, Pandora, plus 10 double-
 sided bargain titles
 INFOCOM: Beyond Zork
 KONAMI: Circus Charlie, Gradius, Iron Horse,
 Jailbreak, Super Basketball
 MDS: King of Chicago, Sinbad, SDI, Three
 Stooges
 MICROPROSE: Airborne Ranger, Destroyer Escort,
 Project Stealth Fighter
 MINDSCAPE: Paperboy, Gauntlet
 POLARWARE: Frank & Ernest's Adventure
 SSI: War in the S. Pacific

COMMODORE 128

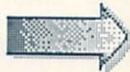
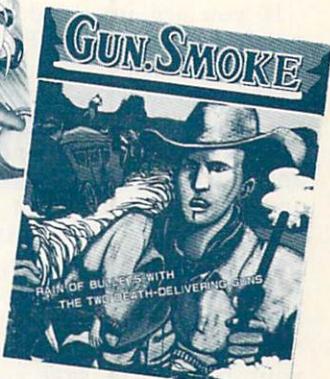
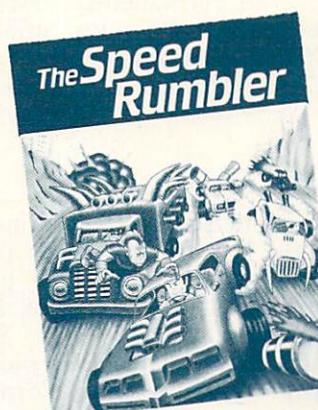
FIREBIRD: Guild of Thieves

AMIGA

ACCOLADE: Test Drive
 ACTIVISION: GFL Championship Football,
 Championship Baseball
 EA: Ferrari Formula One, Return
 to Atlantis
 FIREBIRD: Universal Military Simulator, Jewels
 of Darkness, Knight Orc, Silicon
 Dreams



New Games Coming for Christmas 1987!



INFOCOM:	Beyond Zork
MDS:	King of Chicago, Three Stooges
MICROPROSE:	Silent Service, Gunship
MINDSCAPE:	Indoor Sports, Into the Eagle's Nest
POLARWARE:	Frank & Ernest's Adventure
PSYGNOSIS:	Terrorpods
SIERRA:	Leisure Suit Larry, Thexder, Black Cauldron, Police Quest
SPECTRUM:	GATO, Orbiter
SSI:	Kampfgruppe, Phantasie, Phantasie II

This is by no means a complete list. Besides all these, there will, of course, be the usual influx of new titles from the smaller software companies, as well as a few surprises from some of the major companies. Grease up your joystick and get ready to play! The Videogame Renaissance has arrived!

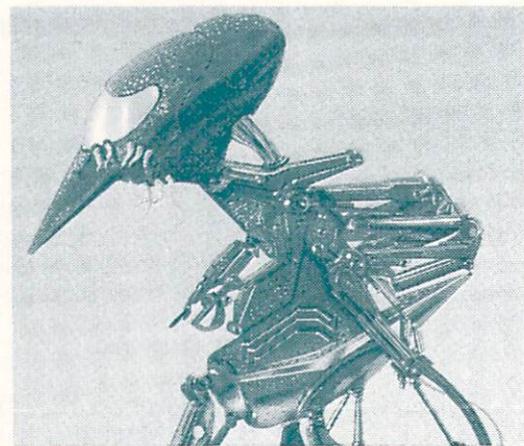
ICONTRROLLER

Suncom's ICONtrroller stick-on mini joystick is a great little gizmo. It's the handiest little device I've plugged in in a long time. One lives on the right front corner of my C128 where I use it for GEOS, games, menu selection, and even cursor movement in some programs. It provides a pass-thru for my 1351 mouse so I can leave both of them plugged in all the time, and I can switch it back and forth between both joystick ports if I have to. I thought at first I might be bumping into it all the time, but the stick is short enough that that has turned out to be no problem at all. With the ICONtrroller, I can do things with one finger that used to take both hands. (Disabled individuals might like it just for that reason.) I'm glad it sticks on permanently, because I'd hate to have anyone make off with mine! (It's compatible with the C64 and Amiga, too, of course.) \$19.99 from: Suncom, 260 Holbrook Dr., Wheeling IL 60090, 312-459-8000.

BUTCHER

If you are involved in video art on the Amiga you need Butcher from Eagle Tree Software. It provides fine tools for the custom-tailoring of IFF pictures. Many of the tools are unique to this package. Butcher is not copy-protected and costs only \$37. It automatically loads and displays any IFF picture in any format, changing the screen format to accommodate different sizes, types, and palettes. That makes it very handy if you want to look at lots of pictures without having to switch viewing programs. But Butcher will also convert any picture from one format to another: lo-res, med-res, hi-res, and HAM.

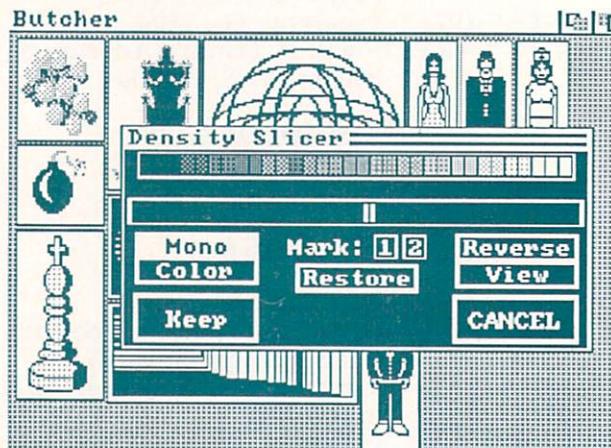
Its controls let you reduce the number of colors in your picture to save memory or expand the number to add detail. You can combine colors, blend colors, merge colors, spread colors over a range, or just count how many pixels on the screen are actually composed of any specific color. You can work with



The Terrorpods Is Coming!



Suncom's handy ICONtrroller joystick.



Density Slicer--one of Butcher's tools.

three separate palettes to try out different color effects. Merging and chopping colors can be done manually or automatically. The density slicer lets you remove light or dark shades beyond a certain intensity, which produces some really nice special effects. You can also slice out individual bitplanes of data to create other effects. There's an edge detect function that can be used to create unfilled outlines from filled pictures; it can also enhance the detail in a picture by detecting and highlighting boundaries between colors. The filter function lets you remove stray pixels from an area, a very nice thing to be able to do, especially with digitized pictures. You can even turn a picture into a mosaic composed of color tiles as large or as small as you want to make them. Though it's not a drawing program, Butcher does provide you with a few elementary drawing tools so you can perform minor touchup work without having to load up your main drawing program. Butcher will also print out a screen or a portion of a screen, and can even convert the picture to a textured black and white format first, if you want.

As if that weren't enough, programmer Jarrell Nickerson has been working on many enhancements to Butcher. By the time this goes to press, he'll be shipping Butcher 2.0, with five times the speed and many improvements. Among the changes are automatic halftoning, a mosaic shape editor, the ability to work with pictures larger than the screen, color cycling, and proportional color toning. The upgrade is only \$10 to registered owners. All that, and he says he's already thinking about Butcher 3.0! Butcher is \$37 from: Eagle Tree Software, PO Box 164, Hopewell VA 23860, (804-452-0623).

THE KICKSTART GUIDE

When the Amiga debuted in Europe, Commodore's European office recognized the need for a comprehensive guide to its operating system, so they commissioned one from Ariadne Software in Great Britain. Now Midnite Press is bringing **The Kickstart Guide to the Amiga** to the U.S. It has sections like "Serial Port Debugging and The Joy of Wack". Nice Brit humor, and lots of good, solid information. From: Midnite Press, 1212 Hagan, Champaign IL 61820, (800-222-4441).

3D SURFACE

If you own a C64 and you've been jealous of the nifty 3D surface models that other computers generate, here's your chance to get revenge. 3D Surface from Digiscape Software is a menu-driven 3D function plotter for the C64 with hidden line removal. It features adjustable elevation, rotation, grid size, scale, and center of graph, as well as user-definable functions. It supports most printers for hardcopy. The sample printout looks pretty good. \$39.95 from: Digiscape Software, PO Box 113058, Carrollton TX 75011, (214-241-9891).

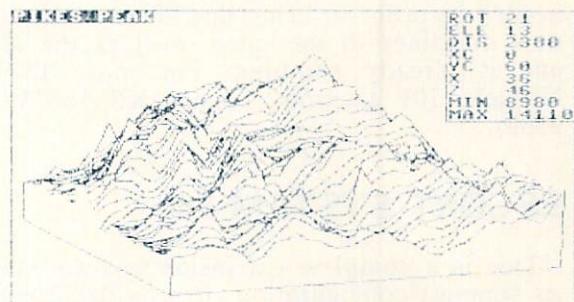
ARIADNE SOFTWARE LTD



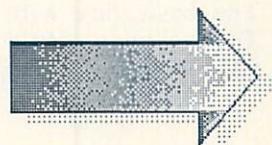
The 'Kickstart' Guide to the AMIGA



British Intelligence.



3D surface modelling with 3D Surface.



C-LTD

C-View is not the submarine in "Voyage to the Bottom of the Sea". It is a \$50 Amiga RGB-to-separated-composite video adapter. It looks like a cable, but inside the RGB connector is a small pc board loaded with parts. That circuitry converts the Amiga's RGB output to a separated composite signal that can be fed into a 1702 or 1902 monitor. For C64-to-A500 upgraders, it could be a real boon, because it would allow delaying the purchase of Commodore's \$350-list Amiga monitor. I've checked out the performance, and I think it's outstanding. The color is sharp and true, and unlike the A1000's own composite output, it produces a good, clear 80-column display. Video VCR devotees will be interested in the C-View, too, because it provides the needed composite video output that Commodore left off the A500 and A2000. Serious A1000 video users might even want to look at it for improved video.

C Ltd. will offer a 512K internal RAM board with battery clock. Though theirs will list for the same price as Commodore's (\$199.95), they say their 4-layer board is less noisy, and socketed RAM chips provide better servicability.

They will also be modifying their SCSI controller for the A500 at a price of \$199.95. This add-on will let you plug in industry-standard SCSI hard disk drives, optical drives, and other SCSI peripherals. C Ltd. has also released networking software for SCSI into the public domain.

C Ltd., 723 East Skinner, Wichita KS 67211, (316-267-3807).

DIGI-VIEW ADAPTER

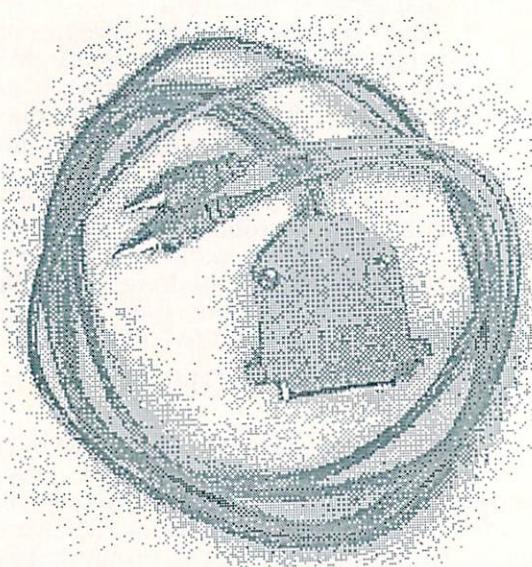
If you want to use Digi-View with the A500 or A2000, you'll need the adapter that NewTek is now selling. It's not very big--just a gender changer in a small case--but inside is a voltage regulator that is needed in order to bring one of the voltages from the new machines to the same level as the A1000. This one is already shipping. For more INFO contact Newtek, 701 Jackson, Topeka KS 66603, (913-354-9332).

ESCORT SYSTEM 500

This is a complete expansion box for the A500. In its simplest configuration, it provides 2 megabytes of RAM and a power supply in a box that sits over your A500 and serves double duty as a monitor stand. The box can hold an additional 2 megs for a total of 4, and can also mount a hard drive and a second floppy. The basic box with 2 megs is \$849 from: Expansion Technologies, 46127 Landing Parkway, Fremont CA 94538, (415-656-2890).

COMMODORE
AMIGA
500
HARDWARE COMING!

It looks like the A500 won't have to wait long for peripherals and add-ons. We've already received many product announcements. Here's a quick rundown of what we know about already:



C-View RGB-to-separated-video adapter.



The Escort box atop an A500.

EXP-512 MEMORY CARD

This internal 512K memory unit with battery-backed clock is Progressive Peripherals' alternative to Commodore's own internal expander for the A500. The list price on this one is \$179.95, \$30 less than Commodore's. They've also got an 8-meg A500 internal RAM card on the drawing boards. No word yet on pricing, available configurations, or how it will work. Progressive Peripherals & Software, 464 Kalamath St., Denver CO 80204, (303-825-4144).

PIGGYBACK 68020/68881

CSA has developed a 68020 piggyback board that plugs into the cpu socket in the A500. The board includes a 68881 math coprocessor chip. If past performance is any gauge, it should be highly compatible and extremely fast. The price is \$895, but no word on availability dates. From: Computer System Associates, 7564 Trade St., San Diego CA 92121, (619-566-3911).

SUPRADRIVE

Supra Corp. is marketing a version of their hard drive for the A500, complete with a small chassis that sits on the expansion port connector. It also has room internally for 1, 2, or 4 megs of expansion RAM, and provides a SCSI port for adding additional drives. It will be available in 20, 30, 60, and 250 megabyte capacities. Supra Corp., 1133 Commercial Way, Albany OR 97321, (503-967-9075).

SKYLES SCSI & MEMORY

Skyles Electric Works (231-E S. Whisman Rd., Mountain View CA 94041, (415-965-1735)) has announced an internal clock/512K RAM expander with a preliminary price tag of only \$149.95, and an internal SCSI interface board.

PHOENIX ELECTRONICS

The A500 shares one problem with the Commodore 64—it is underpowered. If you add on very much hardware, it just gives up (we killed one by plugging in a Genlock). Phoenix has offered replacement supplies for the C64 for a long time, and now they've got the CPS-500 replacement power supply for the A500. This heavy-duty supply even provides 3 auxillary outlets. It costs \$99.95.

They are also offering versions of their 20 and 40 meg hard drives. The PHD-500 in a 20 meg version is \$969, or \$1429 in a 40 meg size. Both have internal power supplies, autoconfigure under AmigaDOS, and connect via an internal SCSI interface. They plug into the A500's left-side expansion buss, which they pass through for other expansion devices.

Phoenix Electronics, PO Box 156, Clay Center KS 67432, (913-632-2159).



Just in at presstime: Believe it or not, this is the new Amiga logo!



Supradrive with interface box for A500.



A500 model of the Phoenix hard drive.



...continued from page 13

Mail From: COMALite F QuantumLink
Date: Sunday 5-Jul-87 22:28 edt

Dear Mark & Benn, It seems to be an unwritten rule not to criticize others in the computer business. But you guys have more respect for fact than tradition. Thank you for giving Len Lindsay the recognition he deserves. He is a nice man, and deserved fairer treatment than he got from COMPUTE!. Please keep up the great work.

Mark H. Finley

Establishing Len's place in the history of Commodore computing was our major concern in writing that editorial. We're glad to see that he is finally receiving some of the recognition he so richly deserves. By the way, many of you may not have realized that he is the same Len Lindsay who founded The COMAL Users Group, and now publishes COMAL Today magazine. If you are up on QuantumLink, you can find him in the COMAL Today section of QLink's Magazine Rack as Captain C.

-Mark & Benn

Mail From: GeoHack QuantumLink

Date: Wednesday 8-Jul-87 18:37 edt

Hello. I just bought my first issue of INFO (#15) and I think it is great. The CHUMP section was good, except that I think it hit too hard on COMPUTE! and their SpeedScript line of programs. COMPUTE! has done a great job of covering the computer industry and they have offered many fine type-in programs over the years, as well as scores of excellent tutorials.

We think SpeedScript is a fine wordprocessor. We also think they've milked it far too long. COMPUTE!'S Gazette has simply failed to grow with its readers, and COMPUTE! itself is dissipating its efforts over too many brands of computers. But we've said all we need to say for a while on the subject of COMPUTE! Unless they do something really notable, we'll be content from here on out to let them run their magazine, and we'll concentrate on running ours.

-Mark & Benn

Mail From: JIMDEB24 QuantumLink

Date: Monday 13-Jul-87 20:32 edt

Are there any good books or software that I can use to help teach myself BASIC programming for the C128 and C64? How about books on programming graphics? Thanks a bunch!

The best series of books we've seen for learning how to program Commodore computers is that put out by COMPUTE! Publications. We'd

suggest Programming the Commodore 64 by Ray West, Mapping the C64 and/or Mapping the C128, and their book on C64 sound & graphics. COMPUTE! also publishes some books that are nothing more than rehashes of their type-in magazine programs, though, so watch out for those titles. You might also want to pick up Commodore's own Programmer's Reference Guide for each machine. They'll answer a lot of your questions. By the way, if you are interested in machine code programming, COMPUTE! has recently published two collections of the best type-in machine language games from their magazines. The good part is that these books contain fully commented assembly source-code for the programs, so you can find out how they were written, instead of meaningless hexadecimal listings. (This is how we've said they should be publishing their programs all along!)

-Mark & Benn

Mail From: DavidO QuantumLink

Date: Wednesday 12-Aug-87 19:32 edt

Benn & Mark: Genlock decoding scrambled Pay-TV? Mine doesn't do that; am I missing something or were you joking? Thanks.

We weren't joking, but we were rumor-mongering. That was a prevalent rumor before the Genlock became widely available. Needless to say, it was the first thing we checked out when we got ours, and we found the rumor to be totally unfounded.

-Mark & Benn

Mail From: JoelH

Date: Tuesday 18-Aug-87 23:12 edt

INFO Magazine: I was wondering if you had your own bulletin board? Joel Hanson

Sorry, no. We don't have the personnel to handle a BBS or our own area on one of the national networks, so we haven't started one up...yet! Unlike some of the other magazines who've made half-hearted attempts to provide on-line support, when we do it we want to do it right. It's definitely in the plans for the future. In the meantime, you can contact us directly online via one of our EMail addresses. Also, on the second Friday night of each month, at 10 p.m. Eastern time, Jim Oldfield, Bob Baker, and I host the INFO/Midnite Forum in the Auditorium on QLink. You might want to drop in for a chat. Look for me to make an occasional guest appearance in the Byte Bar on QLink, and in an occasional conference on PeopleLink, too.

-Mark & Benn



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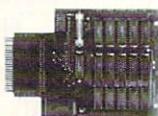
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- I/O lines controlled through simple memory mapped ports each accessed via a single statement in Basic. No interface could be easier to use. A total of ten 8-bit ports.
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We take pride in our interface board documentation and software support, which is available separately for examination. Credit against first order.

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- Perform automated testing.
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Order Model 64IF22. \$169 postpaid USA. Includes extensive documentation and programs on disk. Each additional board \$149. Quantity pricing available. For both C64 and C128.

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Fast. 16-channel. 8-bit. Requires above. Leaves all VIA ports available. For both C64 and C128. Order Model 64IF/ADC0816. Only \$69.

XMAS/C-64

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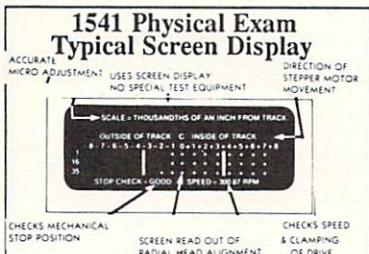
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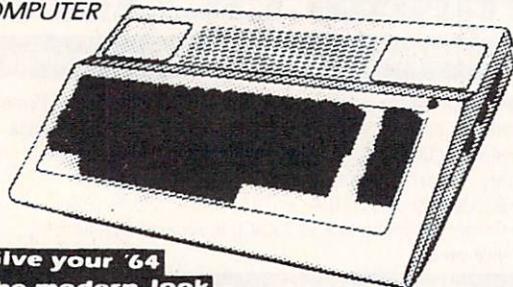
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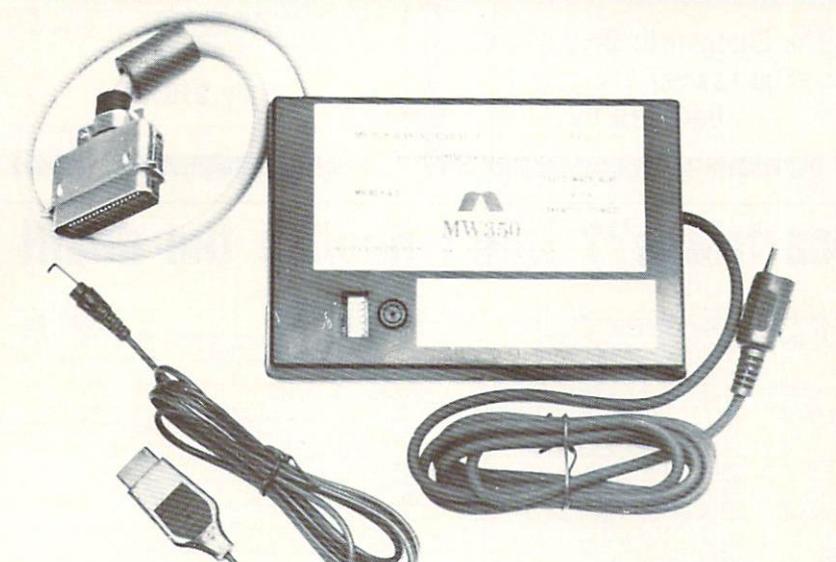
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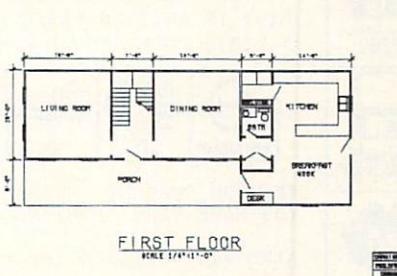
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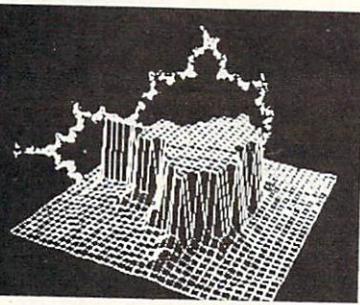
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connector	jump	repeat	perform	end	alarm	field	IFF	disp-in	input	A	X	multiply	
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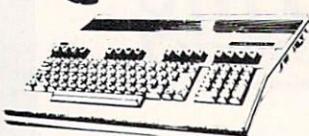
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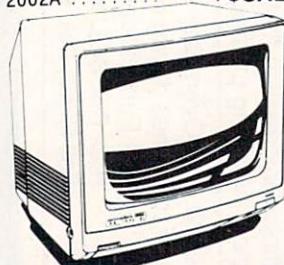
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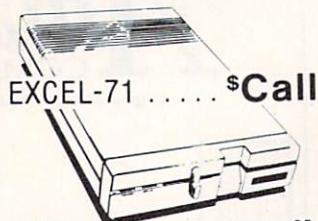


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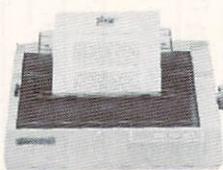


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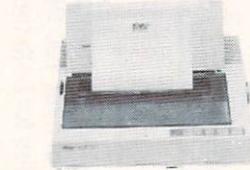
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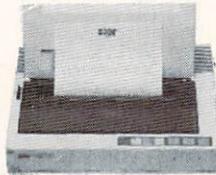


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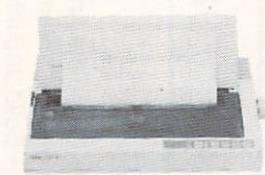
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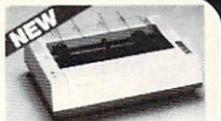


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NEW SOFTWARE/BOOKS ARRIVING DAILY SCALL

AMNESIA
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
415-571-7171

Sci-fi writer Thomas Disch's debut in the adventure game genre. You wake up in a New York hotel, naked and memory-less. (Does this sound vaguely like *Mindshadow*?) The adventure is huge, on four sides of two disks, and covers a prodigious amount of Manhattan, for which a street map is included for non-Gothamites. The manual, blessedly, contains semi-encoded hints for those times you're really stuck. The parser is pretty decent, and a full list of words it understands is provided - a useful touch. Nothing new here, but an interesting entertainment nonetheless. -TM

INFO-rated



FELLOWSHIP OF THE RING
Addison Wesley
Jacob Way
Reading, MA 01867
617-944-3700

As an adventure, it's fun to take charge of the famous quest to destroy the Ring of Power before it falls into Sauron's hands, but this ponderously unimaginative adaptation of J.R.R. Tolkien's classic fantasy leaves me pretty cold. You have your choice of being Frodo, Sam, Merry, or Pippin. Graphic screens are attached to some parts of the game, but they are decidedly inferior to those in 'The Hobbit'. The parser is very slow, making for far too long a wait for your next move. The packaging is first rate, and includes a copy of the book -- I'd rather read it than play the game. -TM

INFO-rated



GUILD OF THIEVES
Firebird
PO Box 49
Ramsey, NJ 07446
201-444-5700

Even more outrageous British humor enlivens this sequel to *The Pawn*. (Read the manual for some guffaws.) The game is a text adventure with nicely-done graphic screens, including a cameo mode which shows a tiny version of the graphic. You are an apprentice thief who's required to steal all the valuables from a castle and its environs in order to be admitted to the Guild. Editing functions for the command line are a most welcome touch and the parser is one of the better ones on the market. Clues are provided in coded form. A winner for text adventure enthusiasts. -TM

INFO-rated



THE DUNGEON
DataSoft
1980 Nordhoff Place
Chatsworth CA 91311
818-886-5922

This is the second in DataSoft's *Alternate Reality* series. The title sequences are very well-done. Unfortunately, the rest of this adventure settles into the familiar small-static-window 3D maze thing we are all too familiar with. Worse, combat takes the form of selecting an action with the number keys and having the text tell you "You miss, he hits for 3 points, etc." It's too bad the imagination didn't extend further into the presentation of this game, because it does have lots of depth, with many monsters, weapons, spells, and other good adventure stuff. MB

INFO-rated



GAUNTLET
Mindscape
3444 Dundee Road
Northbrook, IL 60062
312-480-7667

This translation of the Atari coin-op classic features all the gameplay of the original, but lacks the color. The display is nearly monochrome, with only small bits of color to remind you that it's not just b&w. It could also use some kind of key to tell you what all the screen symbols for food, potions, etc., are. Play is fast, and there are lots of creepy monsters, treasures, and dungeon levels. Gauntlet also features a cooperative two-player mode that lets a second player join you at any time during gameplay. Gauntlet fans won't be disappointed, others may not like it as well. MB

INFO-rated



THE ETERNAL DAGGER
SSI
1046 N. Rengstorff
Mountain View CA 94043
415-964-1353

This is the sequel to SSI's *The Wizard's Crown*, and if you liked that one you will like this one. SSI specializes in these highly-detailed fantasy role-playing games, and all of their titles in this vein are for dedicated traditional fantasy role-playing types only. The detail involved will quickly swamp anyone who is not already firmly entrenched in the genre. Beyond that, there is nothing new here, and the long disk accesses and blocky screen graphics give away its Apple heritage. If you are a fantasy gamer, you will not be disappointed. All others, stay away. MB

INFO-rated



THE GALLERY

Hotel Room

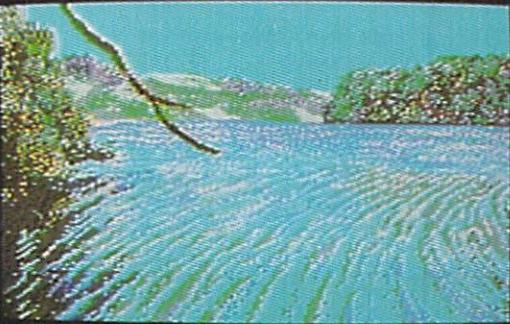
dollar bill, both of which you take. To pass the time the hotel offers a television. Also, a Gideon Bible. A ballpoint pen has been placed near the phone.

To the left of the dresser is a Commodore 64 computer on its own metal cart. You do a slow double-take. Have computers become standard equipment for hotel rooms in the same way that TVs are?

No, there's a decal on the side of the monitor declaring that the computer is the property not of the hotel but of the User-Friendly Computer Store.

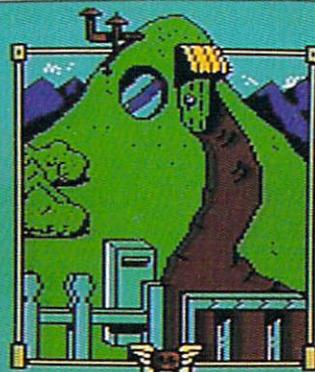
TAKE ROOM KEYC

64/128



assignment, you have been told to ransack a castle and the surrounding area of all its valuables. (None)

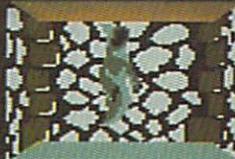
64/128



In a sunny well-tended garden.

64/128

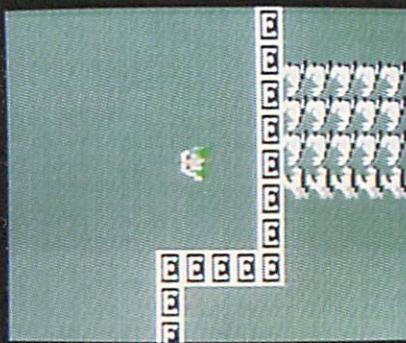
Bogwall Level:0
Stats: STA CHR SCR INC WIS SKL
+ 18 28 21 19 14 22
Experience: 35 Hit Points: 3
You are in a creepy room.
You face a ghost.



Battle Options

- (1) Attack
- (2) Charge
- (3) Ained Attack
- (4) Transact
- (5) Switch weapon
- (0) Curn and run!

64/128



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64/128



(S)EARCH AREA, (M)AKE CAMP, (R)EST, 812
1-8 TO MOVE PARTY, 73
OR (I)NSPECT A CHARACTER? 654
THE WIZARD'S TOWER 17/15 DAWN

64/128

CALIFORNIA GAMES
Epyx
600 Galveston Drive
Redwood City, CA 94063
(415) 366-0606

INFO-rated



Is it just me, or does anyone else see a theme developing at Epyx? World, Winter, Summer, and now California Games (I fully expect to see Yuppie Games, Prison Games, and Galactic Games before we see the end of it!) Good clean healthy fun-in-the-sun, with typically well-done Epyx renditions of surfing, BMX biking, roller-skating, skate-boarding, foot-bagging, and Frisbee-ing. This disk convinces me that there is probably nothing recreational that can't eventually be simulated successfully on a personal computer. BD

PRESIDENT ELECT
SSI
1046 N. Rengstorff
Mountain View CA 94043
415-964-1353

INFO-rated



Pit historical political candidates against each other in a race for the presidency in any election year from 1960 to 1988. You or the computer manage their campaigns, which turns out to be a very tough job! If you are looking for glitzy graphics you'll have to look elsewhere, and you have to live with the game author's built-in evaluation of each candidate's charisma, speaking ability, etc., but each run-through is engrossing. A must for school government classes, and a good example of computers simulating reality. And it's written in listable, unprotected BASIC! MB

STRIP POKER (C64)
Artworx
1844 Penfield Rd.
Penfield, NY 14526
(716) 385-6120

INFO-rated



Here's the companion product for all of you who felt left out or discriminated against by the female strip-poker entry on page 16/17. Actually, both 64 and Amiga versions come with 2 ladies standard: dudes and additional babes are available on auxiliary disks. I think the male disk needs more work, as the ladies here at INFO found the included stud-muffins singularly unattractive - "...is that hair on his chest, or an alien chest-burster trying to get out?" And yes, for those of you old enough to win a poker game, these guys are "anatomically correct" under those lo-risers. BD

BRIAN BLOODAXE
Mandscape
3444 Dundee Road
Northbrook, IL 60062
(312) 480-7667

INFO-rated



And this disk convinces me that you can't make generalizations about software companies or programmers' nationalities. The combination of "Mandscape" and "British Software" would normally cause me to enthusiastically free-associate, "great game!", but this threesome of British rejects should have been denied entry at customs! Gaudy graphics, frenzied action, and unresponsive control interfaces add up to a big flop in this reviewer's book. BD

INTRIGUE
Kinemation
Four Winds Road
Peterborough NH 03458
603-914-6720

INFO-rated



This game is...well, intriguing. It's in black and white, which somehow just contributes to the mood. It features digitized pictures of suspects, which is also an unusual touch. The user interface is joystick-based and fully satisfying. Even the copy protection is unobtrusive, presented as looking up the 'combination to a safe' in the rulebook. If you don't open the safe, it lets you play until you run out of pocket money, so you get a sample of what you're missing! The authors claim 2000 separate mysteries in this game, and if that's true you are getting a lot for your money. Unique. MB

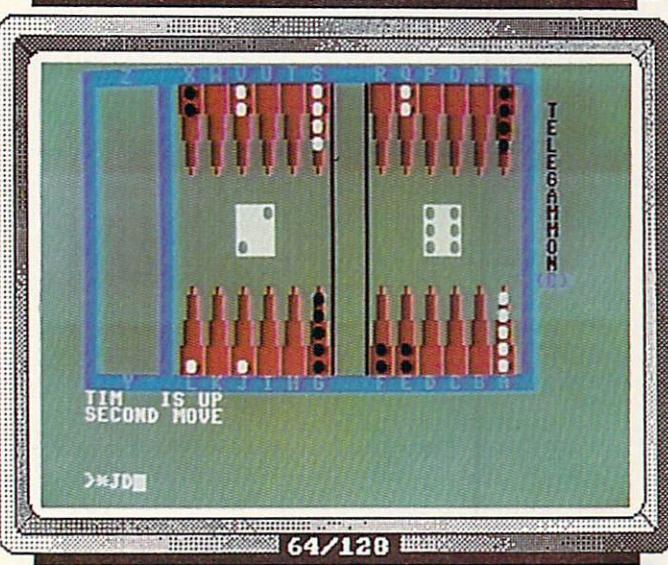
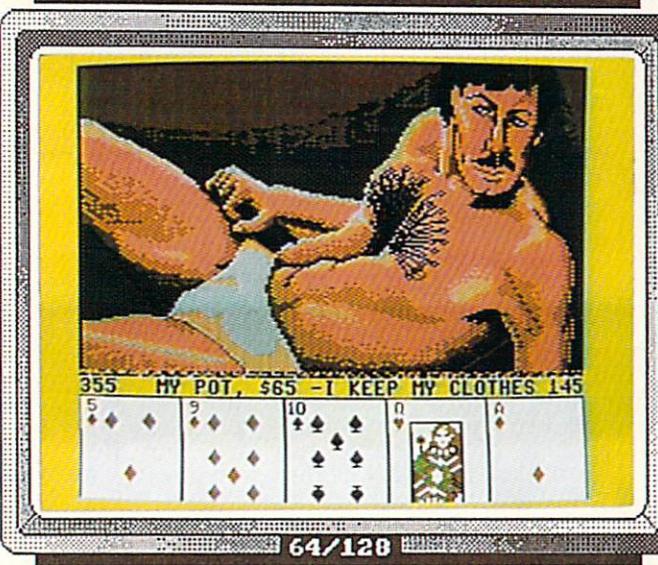
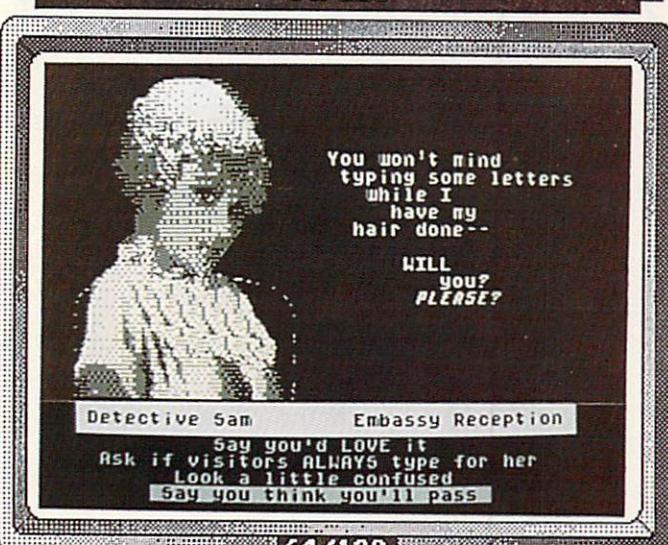
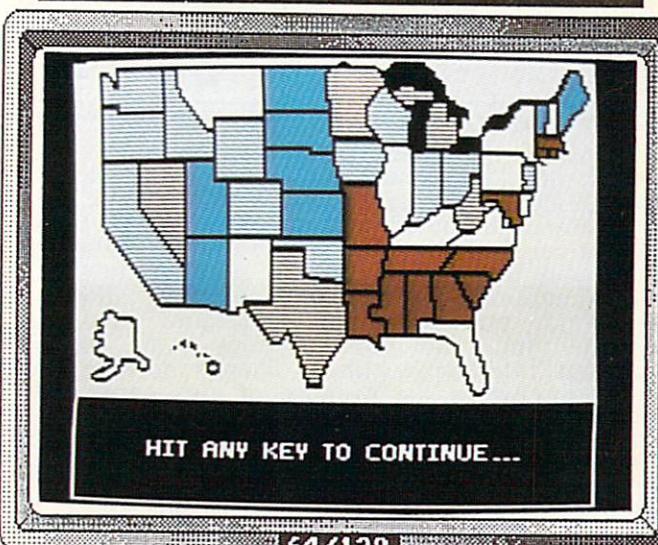
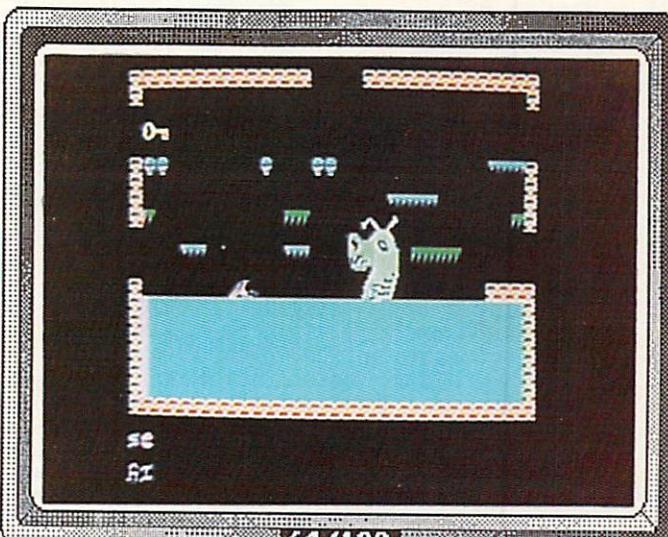
TELEGAMES 1:
THE CLASSICS
S&S Software
PO Box 674
Mexico, MO 65265

INFO-rated



Telegames is a series of 3 disks (so far) of two-player games which can be played via modem. The first disk contains computer chess, checkers, and backgammon, and each is as good as the best public domain versions. The computer doesn't mediate the games; it merely presents the board and displays the moves. It's up to you to stay legal. The single shared input line also serves as a limited 'chat mode'. Unfortunately, input is easily garbled by overtyping one another. A good idea, and fun if you're careful. We hope to see it more polished in future editions. MB

THE GALLERY



STAR MAZE
Sir-tech Software
PO Box 245
Ogdensburg, NY 13669
(315) 393-6633

INFO-rated

This is a scrolling maze game with a cute little spaceship you bounce off the walls. It's a recent translation of an Apple classic, and it has a sort of ancient look to it. (The "Copyright 1982" pretty well tells the whole story.) It is still kind of fun, with opponents that sometimes 'hatch' into other objects when hit, and the physics is fun, too. Your ship has the 'floating in space' feel of the spaceship in Asteroids. If you get it for Christmas, you could have done worse, but you don't need to go out of your way to buy it for yourself. There's plenty of competition that's better. MB

SANXION
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 571-7171

INFO-rated

This and Delta Patrol are two British imports by the same company (and the same author, too: Stavros Fasoulas). The look is Brit, with lots of shaded 3D graphics, and the music is what we've come to expect from England, too: frantic and extremely good. The gameplay is standard arcade shoot-or-be-shot stuff, with the added twist of a split-screen display that shows simultaneous side and top views of your ship and those of your adversaries. All in all, if you're going to blast waves of alien spacecraft, it might as well be this pretty. MB

COMMANDO
Data East
470 Needles Drive
San Jose, CA 95112
(408) 286-7074

INFO-rated

Commando is a translation of Data East's coin-op arcade game of the same name, which I admit I haven't seen. It stars a Rambo-like supersoldier who shoots his way past hundreds of enemy troops to destroy an enemy citadel. The graphics are good, and the action is involving. The characters are nicely animated, too, with a cartoon look. Of course, there's little to this game except dodging the enemy's fire and blasting as many of 'them' as you can in the process, but if you're a fan of these kinds of games, there's lots of action here. Commando won't disappoint you. MB

DELTA PATROL
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 571-7171

INFO-rated

One of the nicest-looking space shoot-em-ups I've seen. Delta Patrol features a 3D-look spinning spaceship and lots of colorful animated adversaries. It has that 'British look' we've come to expect from recent English imports: 3D shading, fast animation, and excellent music and sound effects. Play is smooth and satisfying, and your enemies come in some interesting guises. There's nothing very new in the premise of this game, but Delta Patrol looks great and plays well. And as part of EA's new budget-priced *Amazing Software* line, it's a good value. MB

PAPERBOY
Mindscape
3444 Dundee Road
Northbrook, IL 60062
312-480-7667

INFO-rated

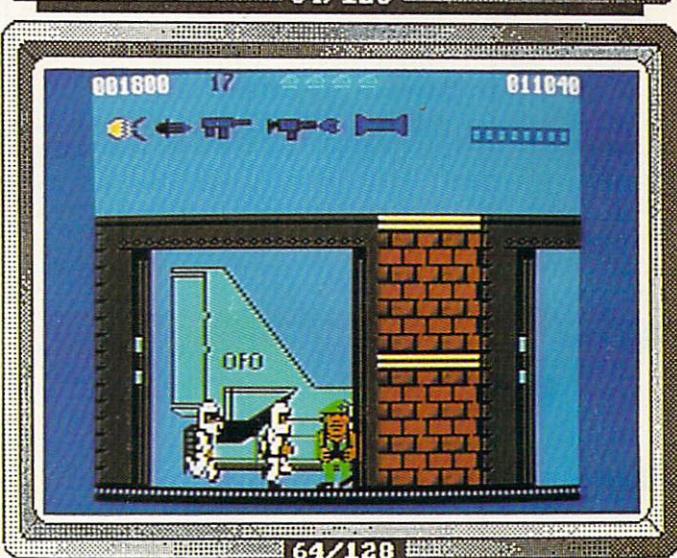
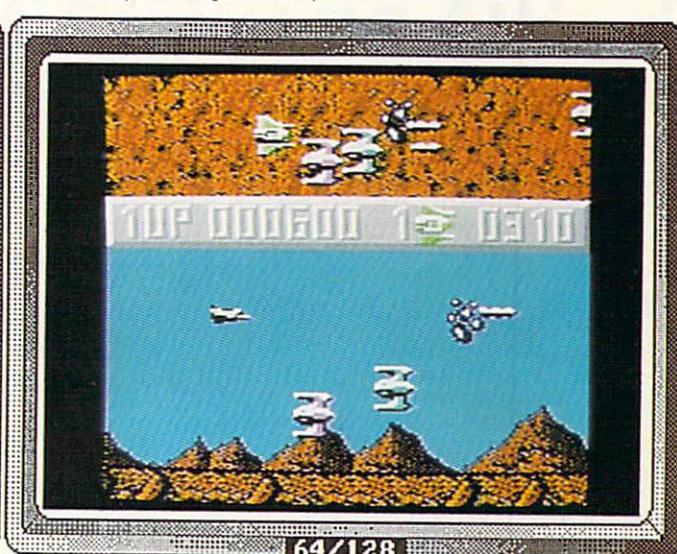
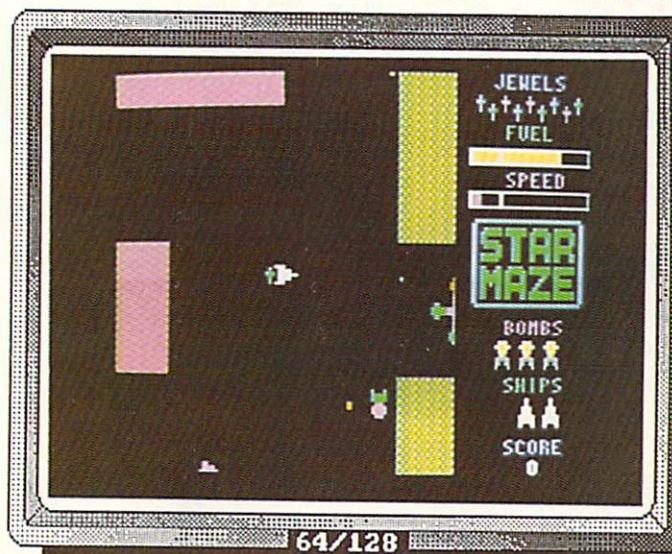
This and Gauntlet are the first two Atari arcade translations from Mindscape (see News & Views). This is a good adaptation of the coin-op game with smooth scrolling 3D graphics and excellent music. The problem is that Paperboy itself is just not much of a game. You avoid bullies, dogs, and traffic, and toss papers into your customers' yards. One problem: the way the screens are laid out makes it almost impossible to tell when there's an oncoming car. The game lacks any depth at all. A good job, but it just wasn't that good a game to start with. MB

BAZOOKA BILL
Spinnaker Software
One Kendall Sq.
Cambridge, MA 02139
(617) 494-1200

INFO-rated

This game is pretty, with good cartoon graphics and nice music, but the gameplay left me spinning in circles. The liner notes say "a relentless stream of enemy soldiers, tanks, trucks, and aircraft", and they ain't kidding. Bill moves more slowly than his adversaries, so you are left with no alternative but to punch, impale, blast, braise, and blow up the steady stream of enemies--if you can keep up. The box also promises 200 screens of mappable territory, but I've been just too busy fighting to notice! If you find most games slow, give Bill a look. MB

THE GALLERY



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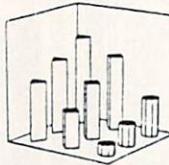
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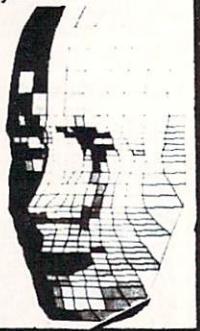
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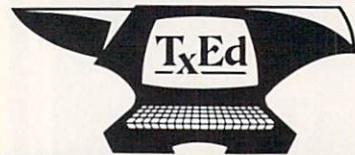
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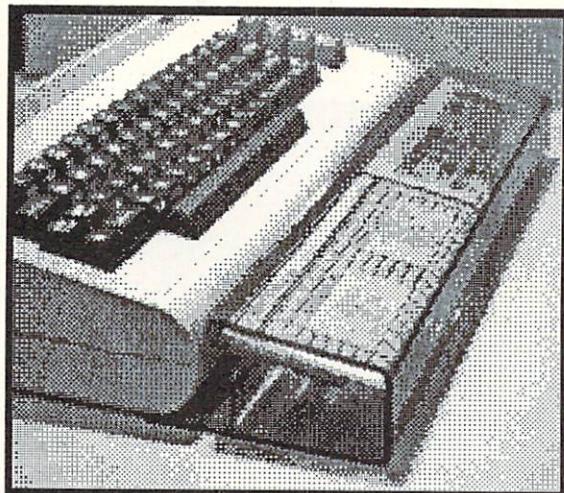
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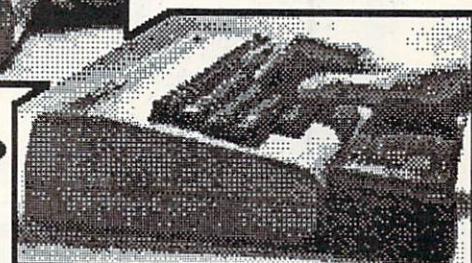


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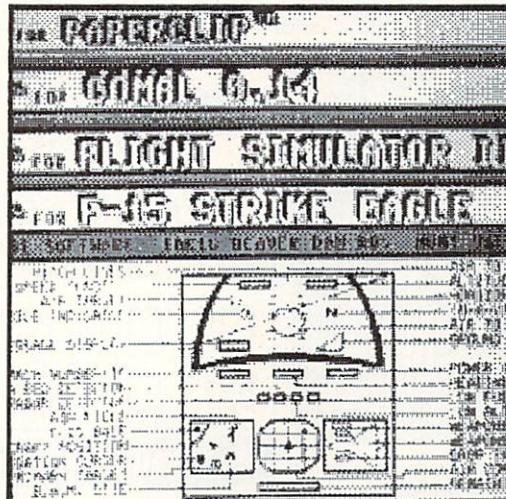


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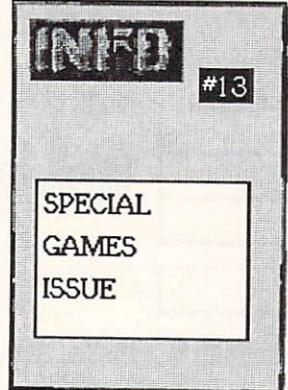
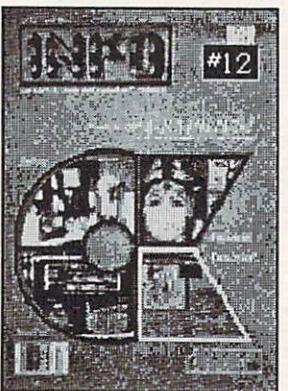
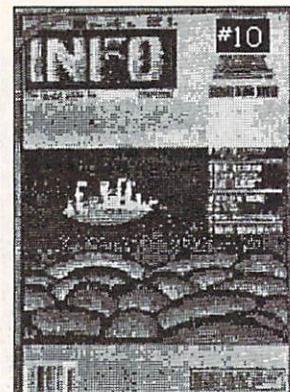
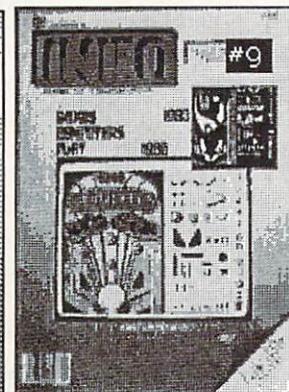
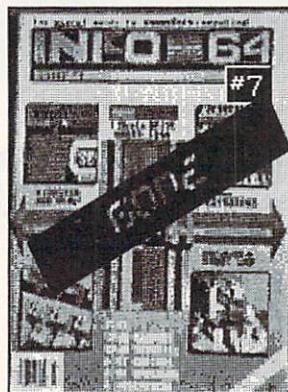
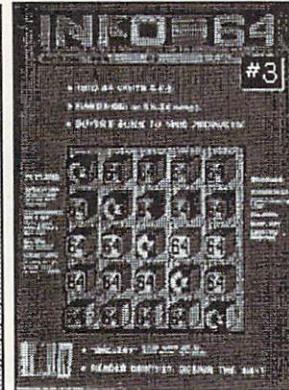
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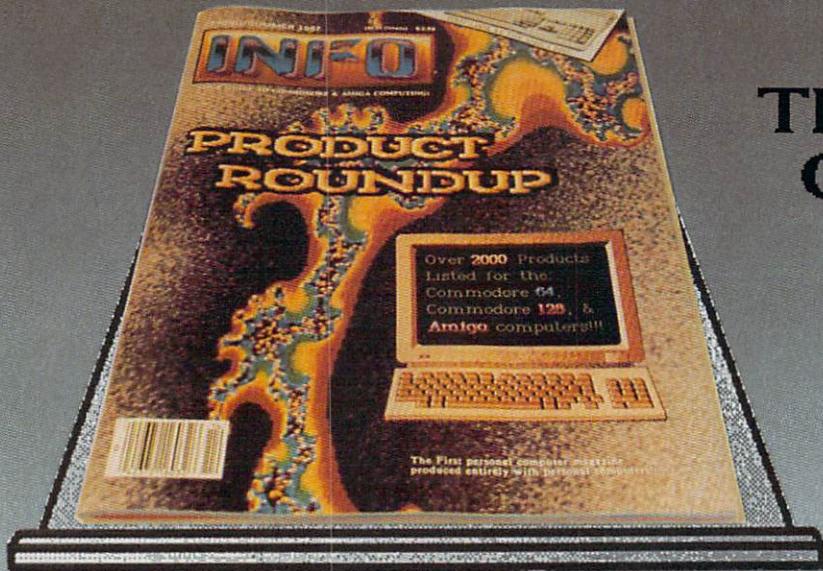
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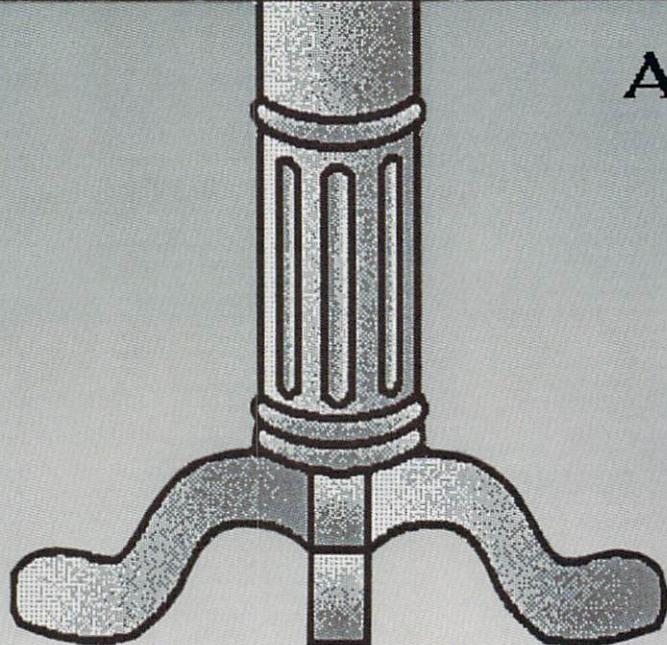
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StarBoard2

If you've owned your Amiga® for a while now, you know you definitely need more than 512k of memory. You probably need *at least* double that amount...but you might need as much as an additional two megabytes.

We want to urge you to use **StarBoard2** as the solution to your memory expansion problem—and to some of your other Amiga-expansion needs as well!

It's small, but it's BIG—

Since most of you want to expand your Amiga's memory without having to also expand your computer table, we designed **StarBoard2** and its two optional "daughterboards" to fit into a sleek, unobtrusive Amiga-styled case that snugly fastens to your computer with two precision-machined jackscrews.

The sculpted steel case of **StarBoard2** measures only 1.6" wide by 4.3" high by 10.2" long. You can access the inside of the case by removing just two small screws on the bottom and pulling it apart. We make **StarBoard2** easy to get into so that you or your dealer can expand it by installing up to one megabyte of RAM on the standard **StarBoard2** or up to two megabytes by adding in an Upper Deck.

This card has decks!

The basic **StarBoard2** starts out as a one megabyte memory space with 0k, 512k, or one megabyte installed. If you add in an optional **Upper Deck** (which plugs onto the Main Board inside the case) you bring **StarBoard2** up to its full two megabyte potential. You can buy your **StarBoard2** with the Upper Deck (populated or unpopulated) or buy the Upper Deck later as your need for memory grows.

And you can add other functions to **StarBoard2** by plugging in its second optional deck—the Multifunction Module!

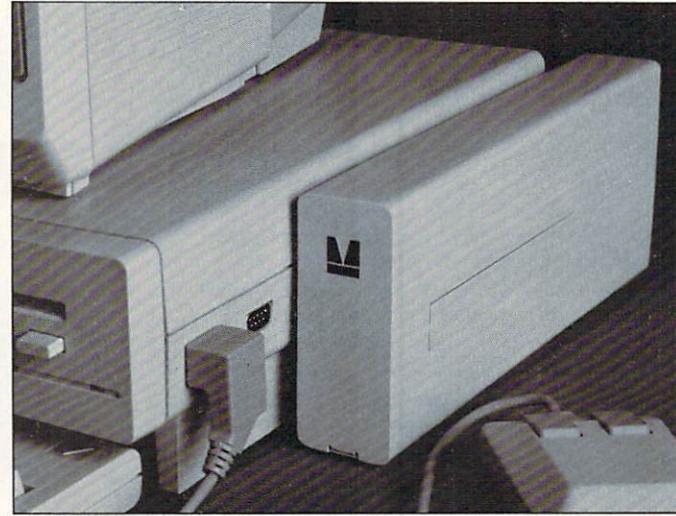
StarBoard2: functions five!

If we count Fast Memory as one function, the addition of the **Multifunction Module** brings the total up to five!

THE CLOCK FUNCTION:

Whenever you boot your Amiga you have to tell it what time it is! Add a **Multifunction Module** to your **StarBoard2** and you can hand that tedious task to the battery-backed,

**Auto-Configuring
Fast RAM
Zero Wait States
User Expandable
from 512k to
2 Megabytes
Bus Pass-Through
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Option: battery/
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real-time clock/calendar. A small piece of MicroBotics software in your WorkBench Startup-Sequence reads the clock and automatically sets the time and date in your Amiga. And the battery is included (we designed it to use an inexpensive, standard AAA battery which will last at least two years before needing replacement).

THE FLOATING POINT FUNCTION:

If any one aspect most characterizes the Amiga it's *fast* graphics! Most graphic routines make heavy use of the Amiga Floating Point Library. Replacing this library with the one we give you with your **Multifunction Module** and installing a separately purchased Motorola 68881 FPU chip in the socket provided by the Module will speed up these math operations from 5 to 40 times! And if you write your own software, you can directly address this chip for increased speed in integer arithmetic operations in addition to floating point math.

THE PARITY CHECKING FUNCTION:

If you install an additional ninth RAM chip for every eight in your **StarBoard2**, then you can enable *parity checking*. Parity checking will alert you (with a bus-error message) in the event of any data corruption in **StarBoard2**'s memory space. So what good is it to know that your data's messed up if the hardware can't fix it for you? It will warn you against saving that data to disk and possibly destroying your database or your massive spreadsheet. The more memory you have in your system the more likely it is, statistically, that random errors will occur. Parity checking gives you some protection from this threat to your data residing in Fast RAM. Note that the Amiga's "chip" RAM cannot be parity checked.

THE IMMORTAL MEMORY DISK FUNCTION (STICKY-DISK):

When you've got a lot of RAM, you can make nice big RAM-Disks and speed up your Amiga's operations a lot! But there's one bad thing about RAM-Disks: they go away when you re-boot your machine. Sticky-Disk solves that problem for you. It turns all of the memory space inside a single **StarBoard2**

into a Memory Disk that will survive a warm-reboot! When your Amiga attempts to grab a **StarBoard2** in Sticky-Disk mode, a hardware signal prevents the system from acquiring the **StarBoard2** as FastRAM (and thereby erasing your files)—instead it is recognized as a Memory Disk and its contents are preserved intact. If you want to work rapidly with large files of data that are being constantly updated (such as when developing software) you can appreciate the Sticky-Disk!

Fast RAM –no waiting!

StarBoard2 is a *totally* engineered product. It is a ZERO WAIT-STATE design, auto-configuring under AmigaDOS 1.2 as Fast RAM. Since AmigaDOS 1.1 doesn't support autoconfiguration, we also give you the software to configure memory in 1.1.

Any applications software which "looks" for Fast RAM will "find" **StarBoard2**. And you'll find that your applications run more efficiently due to **StarBoard2** on the bus.

A passing bus? Indeed!

What good is an Expansion Bus if it hits a dead end, as with some memory cards? Not much, we think—that's why we carefully and compatibly passed through the bus so you could attach other devices onto your Amiga (including another **StarBoard2**, of course!).

The sum of the parts...

A really nice feature of the **StarBoard2** system is that you can buy exactly what you need now without closing off your options for future expansion. You can even buy a 0k **StarBoard2** (with a one megabyte capacity) and populate it with your own RAM (commonly available 256k by 1 by 150ns memory chips). When you add **StarBoard2** to your Amiga you have a powerful hardware combination, superior to any single-user micro on the market. See your Authorized Amiga Dealer today and ask for **StarBoard2**

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StarBoard2, 0k (1 meg space):	\$349
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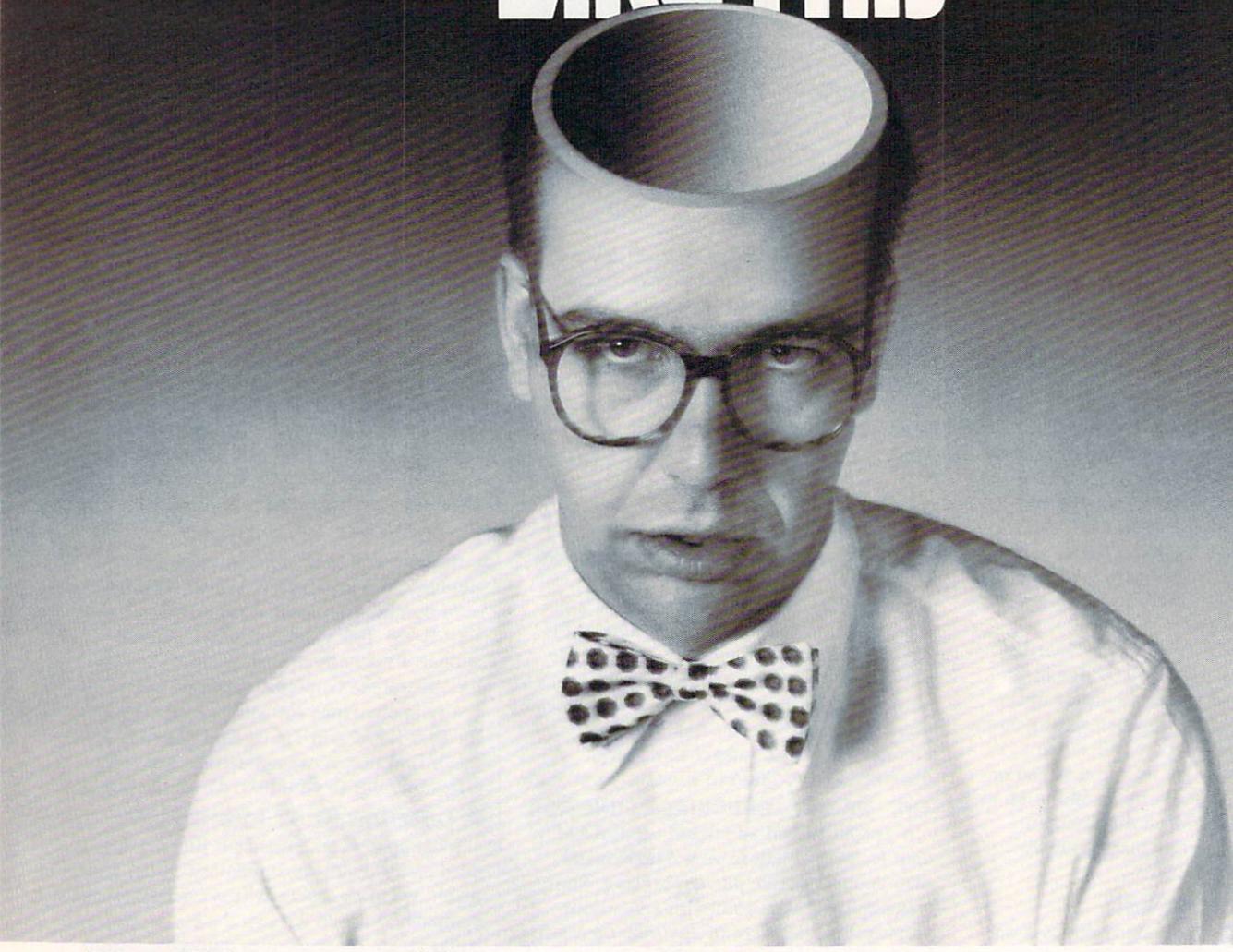


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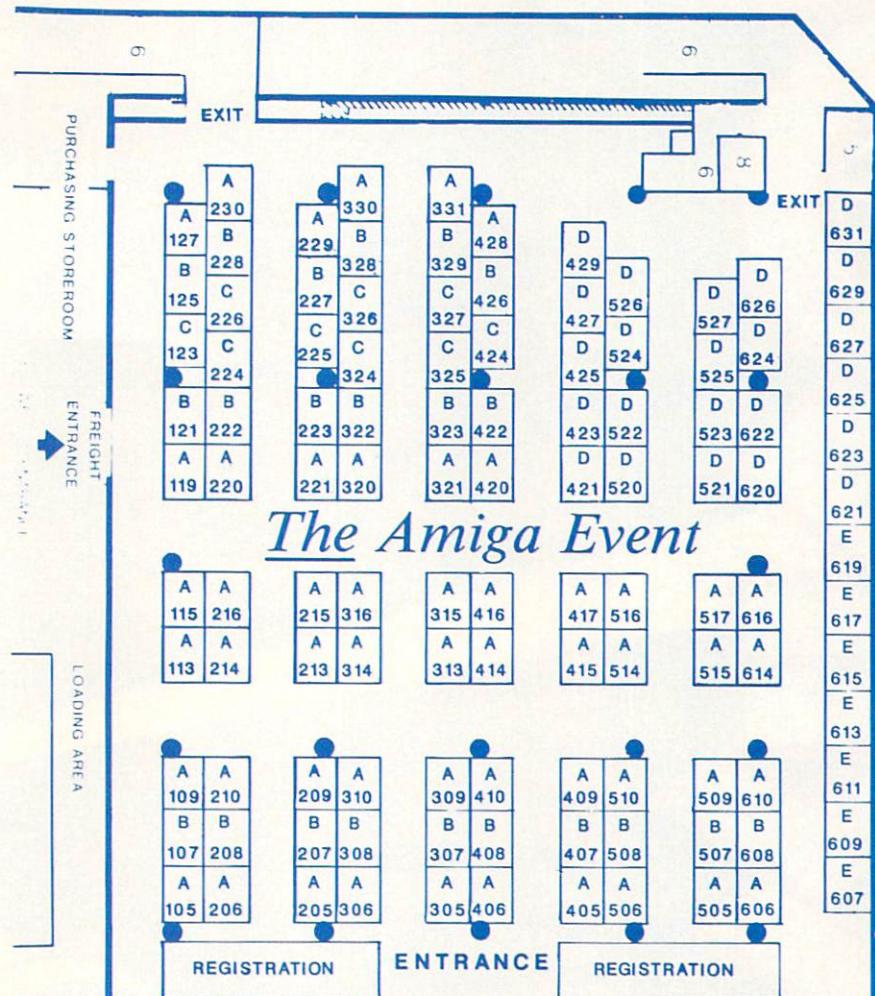
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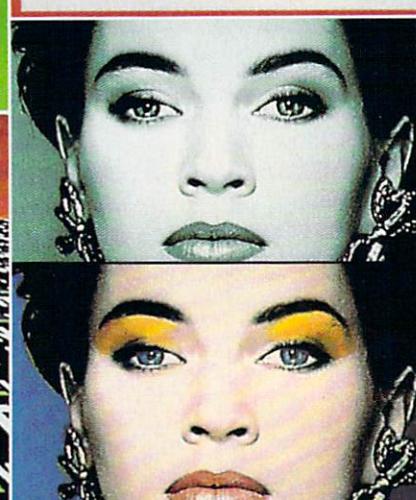
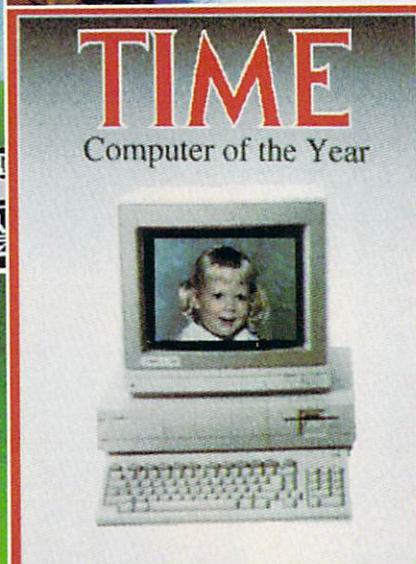
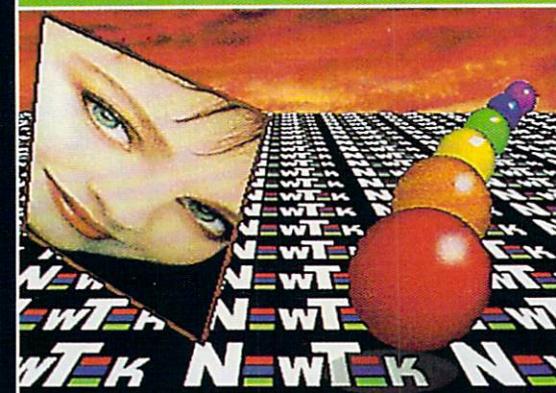
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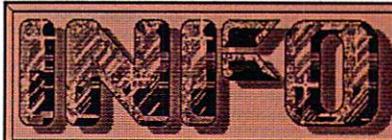
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ADVERTISER INDEX

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- 105 Ami Expo
- 82 Artworx
- 10 Berkeley Softworks
- 87 Briwall Software
- 86 CAPCOM
- 81 Cardinal Software
- 81 Central Coast Software
- 81 COMAL Users Group
- 109 Complete Data Automation
- 102 Computer Best
- 84 Computer Mart
- 85 Computer Mart
- 6 DataSoft
- 106 Discovery Software
- 107 Discovery Software
- 104 Expansion Technologies
- 82 Grapevine Software
- 100 INFO Back Issues
- 99 INFO Ergboard/cards
- 101 INFO Product Roundup
- 110 INFO Unclassified
- 79 Jason-Ranheim
- 80 Lighthouse Computers
- 3 Loadstar
- 103 MicroBotics
- 90 MicroComputer Services
- 91 MicroComputer Services
- C4 MicroIllusions
- 98 Micro Magic
- 83 Micro R&D
- 88 Micro-Pace
- 9 MicroProse
- 98 Microsmiths
- 83 Midwest Software
- 7 Mindscape
- 82 Money Machine Magazine
- 82 NAPI
- C3 NewTek
- 98 Overbyte
- 88 PDJ
- 89 PIM Publications
- 81 Redmond Cable
- 80 RK Productions
- 79 Schnedler Systems
- 89 Seven Seas Software
- 108 Skyles Electric Works
- 89 S.O.G.W.A.P.
- 8 Supra Corp.
- 83 Thoughtform
- 83 Xetec
- 79 Xytec

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F1

F1: Cancel
1. Restore
2. Show Previous
S-F1: Super/Subscript
1. Superscript
2. Subscript
3. Toggle Overstrike
4. Advance Up
5. Advance Down
6. Advance to Line
A-F1: Thesaurus
C-F1: New CLI

F2

F2: Forward Search
S-F2: Backward Search
A-F2: Replace
C-F2: Spell Check

F3

F3: Italics
S-F3: Switch Window/Document
Move between docs/windows
Change case if highlighted
1. Uppercase
2. Lowercase

copyright 1987 WordPerfect Corp.

F4

F4: Hanging Indent
S-F4: Block Indent
A-F4: Block On (or use mouse)

C-F4: Move Text/Block/Rectangle

1. Sentence
2. Paragraph
3. Page
4. Retrieve Column
5. Retrieve Text
6. Retrieve Rectangle

Move Block if highlighted

1. Cut Block
2. Copy Block
3. Append
4. Cut/Copy Column
5. Cut/Copy Rectangle

F5

F5: Directory
1. Retrieve (WP documents)
2. Delete
3. Rename
4. Print
5. Text In (ASCII files)
6. Look
7. Change Dir
8. Copy
9. Word Search
S-F5: Insert Date
1. Insert Text
2. Format
3. Insert Function

A-F5: Mark Text
1. Outline On/Off
2. Paragraph No.
3. Redline
4. Remove Redlined Text
5. Index
6. Define Ind/Con/Out Style
7. Generate Index/Contents
C-F5: Text (ASCII) In/Out
1. Retrieve
2. Save
3. Retrieve Locked File
4. Save Locked File

Booting from CLI provides the following options:
WP [filename] brings up the specified document
WP -s permits defaults to be changed
WP -b [# of minutes] auto-backup interval
WP -w [edit buffer size in Kb] minimum of 16K

ERG CARD™ FOR USE WITH: WORDPERFECT II

F6

F6: Bold
S-F6: Center
A-F6: Flush Right
C-F6: Tab Align (See S-F8)

A-F7: Math/Columns
1. Math On
2. Math Def
3. Column On/Off
4. Column Def
5. Column Display

F8

F8: Underline
S-F8: Line Format
1. Tabs
2. Extended Tabs
3. Margins
4. Spacing
5. Hyphenation
6. Align Character (C-F6)

A-F8: Page Format
1. Page # Position
2. New Page #
3. Center Page (vertical)
4. Page Length

5. Top Margin (half-lines)
6. Headers/Footers
7. Page # Column Positions
8. Suppress / Current Page
9. Conditional End of Page

A-F9: Print Format
1. Pitch/Font
2. Lines per Inch
3. Justification On/Off
4. Underline Style
5. Sheet Feeder Bin #
6. Insert Printer Command

D. Date
E. End of Record
F. Retrieve Field
G. Invoke Macro
N. Next Record
P. Open Primary
Q. Stop Merge
R. End of Field
S. Open Secondary
T. To Printer
U. Rewrite Screen
V. Transfer Codes

C-F9: Merge

F9

F9: Merge R (End of Field)
S-F9: Merge E (End of Record)
A-F9: Merge Codes
C. From Keyboard

F10

F10: Save
S-F10: Retrieve
A-F10: Invoke Macro
C-F10: Macro Definition

Cursor Up

Home ————— 7 8 9 ————— Page Up
Cursor Left ————— 4 5 6 ————— Cursor Right
End ————— 1 2 3 ————— Page Down
Cursor Down ————— 0 ————— Screen Up
Typeover ————— — ————— ENTER

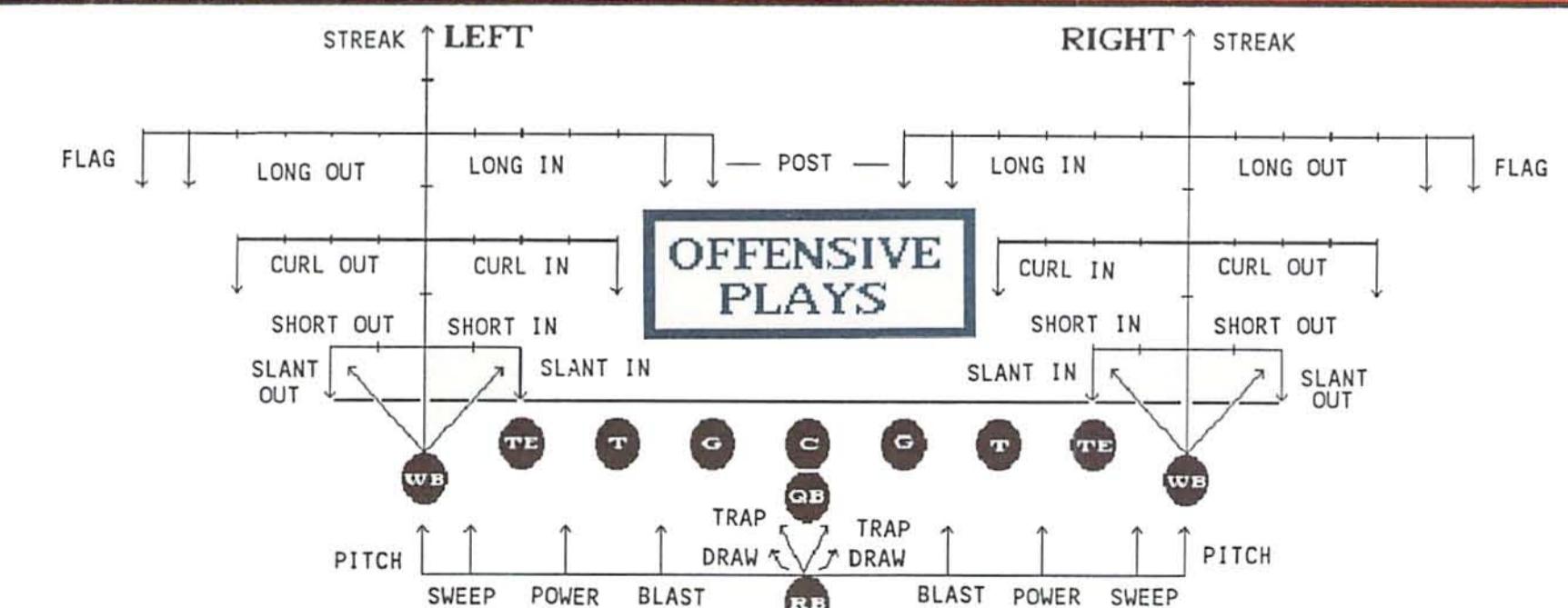
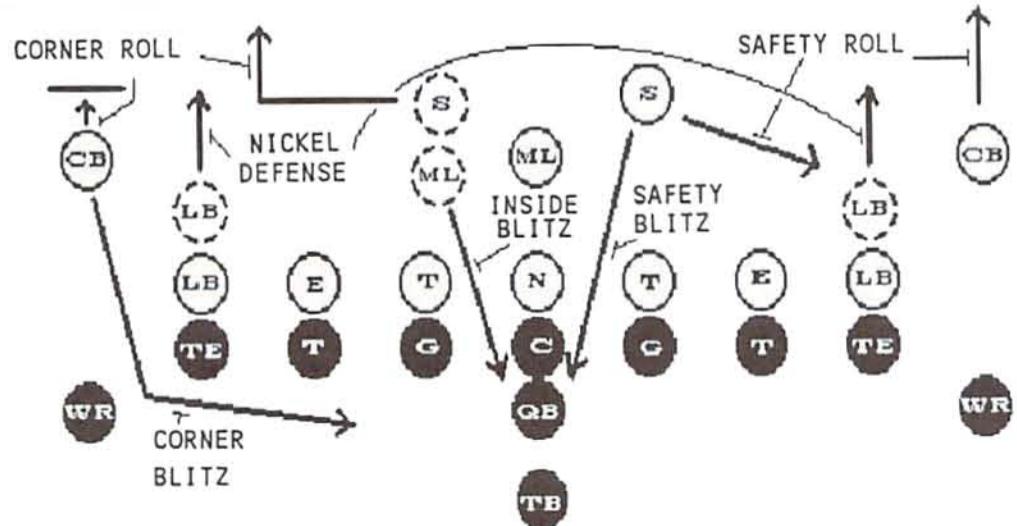
CTRL + 3 = Delete to end of page
CTRL + 5 = Goto
CTRL + 7 = Goto

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PLAY	RUN	SHORT	LONG
		PASS	PASS
Corner Roll	5	5	2
Safety Roll	4	6	3
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Corner Blitz	1	3	5
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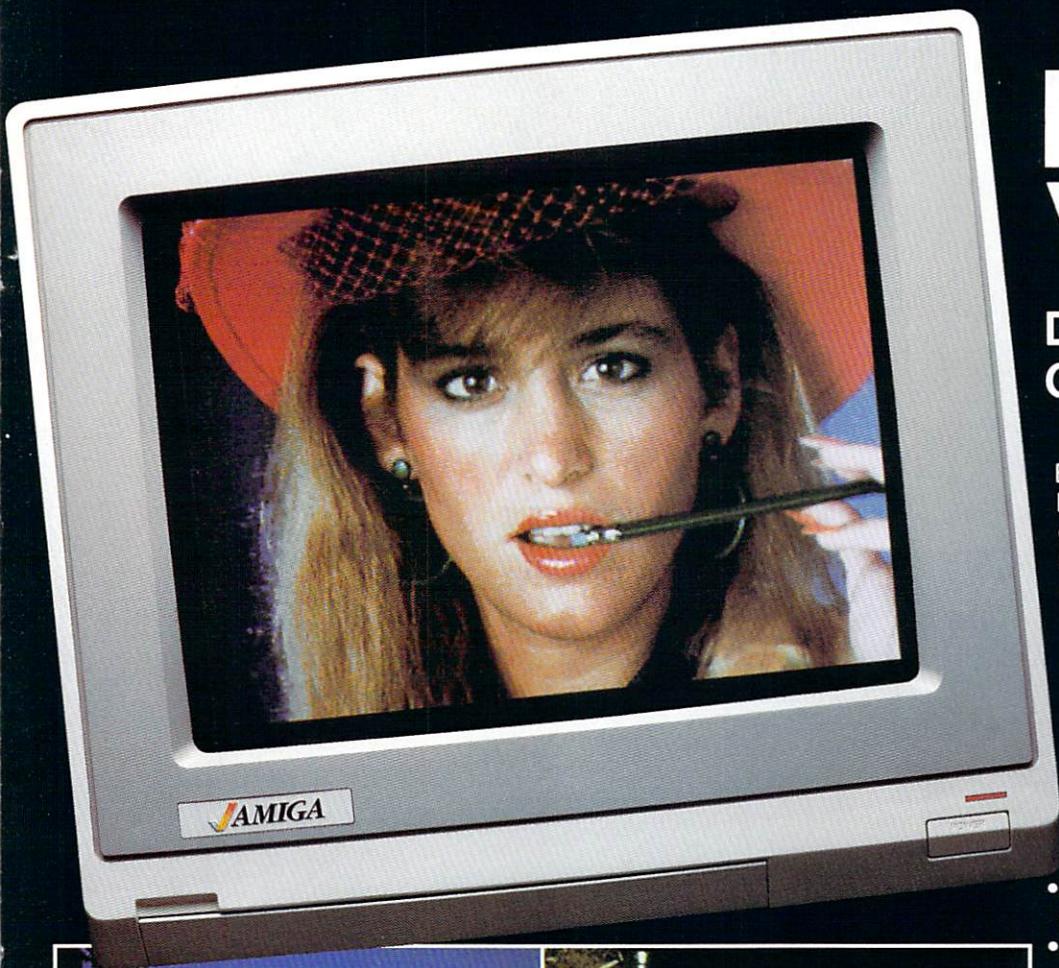
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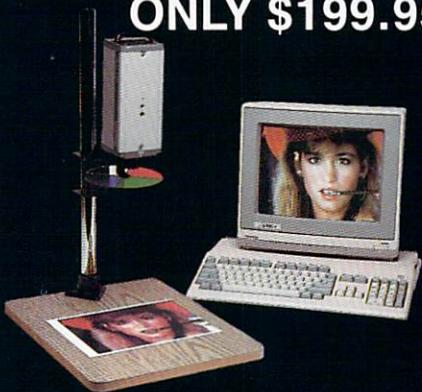
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